Why do primary care doctors quit direct patient care?

A systematic review of empirical research

FINAL Report

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Contribution statements:

Contributor/Author	Their contribution
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Linda Long	Led the qualitative thematic synthesis. Assessed qualitative papers for inclusion and data extracted and quality-assessed qualitative papers. Produced the conceptual analytic framework and wrote the explanatory model and narrative. Wrote the qualitative thematic synthesis chapter. Wrote the PPI discussion points Appendix. Contributed to drafting and editing of final report.
Sophie Robinson	Developed the literature search strategy and carried out the bibliographic searches. Developed and implemented a strategy for grey literature searching and carried out the grey literature searches. Title and abstract screening and full-text screening and paper selection. 1st reviewer data extraction and critical appraisal for included quantitative survey papers. Wrote the literature searching methods and results, the PRISMA flowchart and Appendices. Contributed to drafting and editing of final report.
Felix Gradinger	Contributed to the development of the review protocol. Title and abstracts screening and full-text screening and paper selection. Preliminary data extraction of included papers. Contributed to drafting and editing of final report.
Judit Konja	Independently data-extracted and quality-assessed a sample of the quantitative survey papers. Contributed to drafting and editing of final report.
Emily Fletcher	Commented and contributed to the development of the review protocol. Contributed to drafting and editing of final report.
John Campbell	Is principal investigator of the wider mixed methods study of which this review is a part; commented and contributed to the development of the review protocol; commented on interim report drafts; and contributed to drafting and editing of final report.
Alex Aylward	Is one of two PPI (Patient and Public Involvement) co-investigators on the wider ReGROUP project. He commented on the review protocol and gave feedback on our emerging findings as part of the systematic review's PPI workshop.
Jo Welsman	Worked with Felix Gradinger and Rob Anderson to organise the mid-review PPI workshop and recruit relevant members of the PPI group to it.

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Contents

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1 Report Summary

1.1.1 Background: current problems in the GP workforce

There is said to be a crisis in general practice in the UK due to so many GPs leaving direct patient care, or reducing their hours, and many intending to do so. A survey of UK GPs by the Commonwealth Fund in 2015 (Martin et al. 2016), found that nearly 30% of them planned to leave general practice within five years. As well as those planning to retire, this also included a substantial minority intending to switch medical specialism, and others aiming to completely change career. Another, similar, study found that 42% of GPs in central England intended to leave general practice (Dale et al. 2015). At the same time GPs appear to be more stressed and more dissatisfied than ever before, and more so than GPs and primary care practitioners in all other countries (Martin et al 2016; 8th wave of the 'Worklife Survey' of GPs - Gibson et al 2015). This is occurring at a time of increasing demand for primary care services, both due to demographic changes such as the aging population, and more health care being shifted away from hospital settings and disease specialists. There is therefore an urgent need to understand what factors are driving these trends, and then which of them may be more amenable to intervention.

1.1.2 Context of this systematic review

This research is part of a wider mixed methods study (ReGROUP) which focuses on the retention of the experienced GP workforce, and on supporting the return to work of GPs following a career break. Through better understanding the factors that lead GPs - especially experienced GPs in the UK NHS - to leave direct patient care, the ReGROUP study ultimately aims to develop policies and strategies to support GPs returning to work after a career break or retaining the experienced GP workforce aged 50-60 years.

This systematic review is intended to contribute to addressing the following two aims of the overall ReGROUP study:

> To develop a conceptual framework and detailed assessment of factors associated with UK GPs' decisions to: a) quit direct patient care, b) take career breaks from general practice, and c) return to practice after a career break.
>
> To identify the potential content and assess the evidence supporting key potential components of policies and strategies aimed at retaining experienced GPs and/or supporting the return of GPs to direct patient care following a career break.

1.1.3 Review Questions

The systematic review reported here aimed to answer the following question:

What are the factors in the UK and other high income countries which affect GPs' decisions to:

> a) quit direct patient care,
>
> b) take career breaks from general practice, and
>
> c) return to general practice after a career break?

General Practitioner (GP) is used here to denote any medically qualified clinical professional (doctor) whose main clinical role is community-based, outside hospital, and who is a generalist rather than a disease specialist (i.e. in primary care).

2 Review methods

2.1 Searches

Published articles and 'grey' literature were considered with articles restricted to those published in English from 1990 onwards. Two searches were carried out. The first search identified published, unpublished and grey literature studies and was run in a variety of relevant databases. The second search drew on supplementary search methods to locate unpublished studies and grey literature. This search built on articles included at full-text in the first search, using forward and backward citation chasing. Other sources (e.g. relevant organisation websites) were also searched for grey literature.

2.1.1 Developing the search strategy

Population and setting terms. After some initial scoping searches, it was decided to include some setting terms (primary care etc.) in addition to the more specific population terms (General Practitioner etc.). This was in order to capture records from countries where GP is not a commonly used term and there is no specific equivalent job title. These were all combined with OR in order not to restrict results and miss potentially relevant papers.

Exposure terms. Many terms were explored and tested for this part of the search, in order to find a balance of sensitivity and specificity in the search results. Concepts such as part time working, medical retirement, absenteeism, return to work, were all investigated. Some relevant records were examined to ascertain which MeSH headings and keywords were commonly used. The most relevant and commonly used terms were selected for the strategy.

The idea of using a study filter was discussed (e.g. systematic reviews and observational studies) but it was decided not to use one. Records were limited to 1990 onwards. 3655 records were retrieved in Medline using the following strategy.

Medline search strategy

1. Family Practice/ or General Practice/
2. physicians, family/ or physicians, primary care/
3. General Practitioners/
4. Primary Health Care/
5. "primary care".tw.
6. "general practi$".tw
7. "family doctor$".tw.
8. "family physician$".tw.
9. "family medic$".tw.
10. (GP or GPs).tw.
11. or/1-10
12. (career$ adj3 (interrupt$ or chang$ or pattern$ or decision$ or leav$ or break$)).tw.
13. (retire$ adj3 (decision$ or medical$ or option$ or choice$ or pattern$ or determin$)).tw.
14. (job$ adj3 (chang$ or leav$)).tw.
15. (work$ adj3 (retention or retain$)).tw.
16. (long adj3 (sick$ or absen$ or ill$)).tw.
17. (burnout or "burn out").tw.
18. Job Satisfaction/
19. Personnel Turnover/
20. Career Choice/
21. Retirement/

22. or/12-21
23. 11 and 22
24. limit 23 to yr="1990 -Current"

2.1.2 Searching the databases

The following databases were searched on 28-29 January 2016: Medline, Medline in Process, PsycInfo, HMIC (Healthcare Management Information Consortium), Cochrane, ASSIA (Applied Social Sciences Index of Abstracts), Web of Science.

Embase was excluded as for this subject it would not have added additional material apart from conference abstracts. It was decided that we did not wish to include conference abstracts in our search results.

We tested searching CINAHL but the records found were largely concerned with nursing practice rather than with medical practice so we decided to exclude this database. We felt that any important studies mentioned in the nursing journals would also be reported elsewhere.We also considered Lilacs (for records from Chile) but excluded this on the grounds that primary care in Chile is sufficiently different to primary care in the UK not to make the return of results useful enough to compensate for the effort of searching.

Searching these databases yielded 6661 abstracts. After deduplication these were reduced to 5227. Updates to these searches were carried out on 22 April 2016. Forward and backward citation searches were carried out for the final full text includes on 29 April 2016 using Scopus, Web of Science and Google Scholar.

[Appendix A lit search strategies used]

2.1.3 Grey literature search methodology

We carried out a search out for the names of all the organisations representing GPs in the OECD countries. The list of relevant organisations was found at WONCA - World Organization of National Colleges, Academies and Academic Associations of General Practitioners/Family Physicians. The individual websites of the GP organisations of the OECD countries were then searched for any relevant policy documents or GP surveys in English on 24-25 February 2016.

A search was carried out for the individual websites for each OECD country's Department of Health or equivalent. On each website, we searched for Government policy documents on GP working conditions in English on 7 Mar 2016.

We carried out a broad Google search on 24-25 February 2016 for surveys, reports and policy documents from OECD countries on GP burnout, retention, early retirement and part time working. In addition some articles were found reporting on these.

Grey literature sources were searched on 7 March 2016 including GreyNet, Open Grey, Trip database, NHS Evidence, Public Health England and NHS networks sources. A Google search for newspaper articles reporting on relevant studies was also carried out on the same date.

Forward and backward citation searches were carried out for the final full text includes on 29 April 2016 using Scopus, Web of Science and Google Scholar.

2.2 Inclusion criteria and processes

2.2.1 Condition or domain being studied

Leaving or returning to direct patient primary care for any reason (e.g. through early retirement or taking a career break). Early retirement is defined as retirement before the statutory age of retirement for medical professionals in a given country.

Studies focussing exclusively on **maternity-related career breaks** were included if the study included a focus on factors determining timing and arrangements for returning to work as well as taking maternity leave in the first place.

Similarly, studies about **long-term sickness absence or early retirement due to illness** or disability were also included.

2.2.2 Participants/population

General Practitioners and other primary care-based generalist doctors practising in high-income OECD countries (=32 countries) with health systems that tend to have comprehensive primary care based on general/primary care physicians working in non-hospital, community settings.

[Appendix B list of OECD countries]

In some countries, this may include community-based paediatricians. Studies solely about community-based paediatricians were excluded. Studies including some paediatricians or other community-based specialists were included if over 80% of the sample were primary care-based generalist GPs/physicians meeting our definition of a GP.

2.2.3 Types of study included

Any empirical research studies (qualitative, quantitative or mixed methods) which EITHER *aimed to* assess factors that are associated with GP retention/return to patient care decision-making, or which *are likely to* have generated research data about such factors.

The review sought studies involving any GPs/primary care physicians, regardless of age or number of years since qualification in order to cover the whole continuum of possible career trajectories from initial recruitment, retention throughout, as well as retirement.

We sought studies which evaluate any reasons for quitting direct patient care or taking a career break (i.e. not just early retirement or career breaks, but also doctors moving to hospital specialties, commissioning or public health, working part time, or never returning to work after paternal leave).

If papers did not report separately or solely about the issues addressed in our research question and aims (e.g. early retirement, career breaks etc. of GPs/primary care based doctors), then these were excluded.

Papers found included:

(a) qualitative studies of interviews with GPs

(b) questionnaire surveys of GPs, and

(c) regression analyses of routine employment/workforce data.

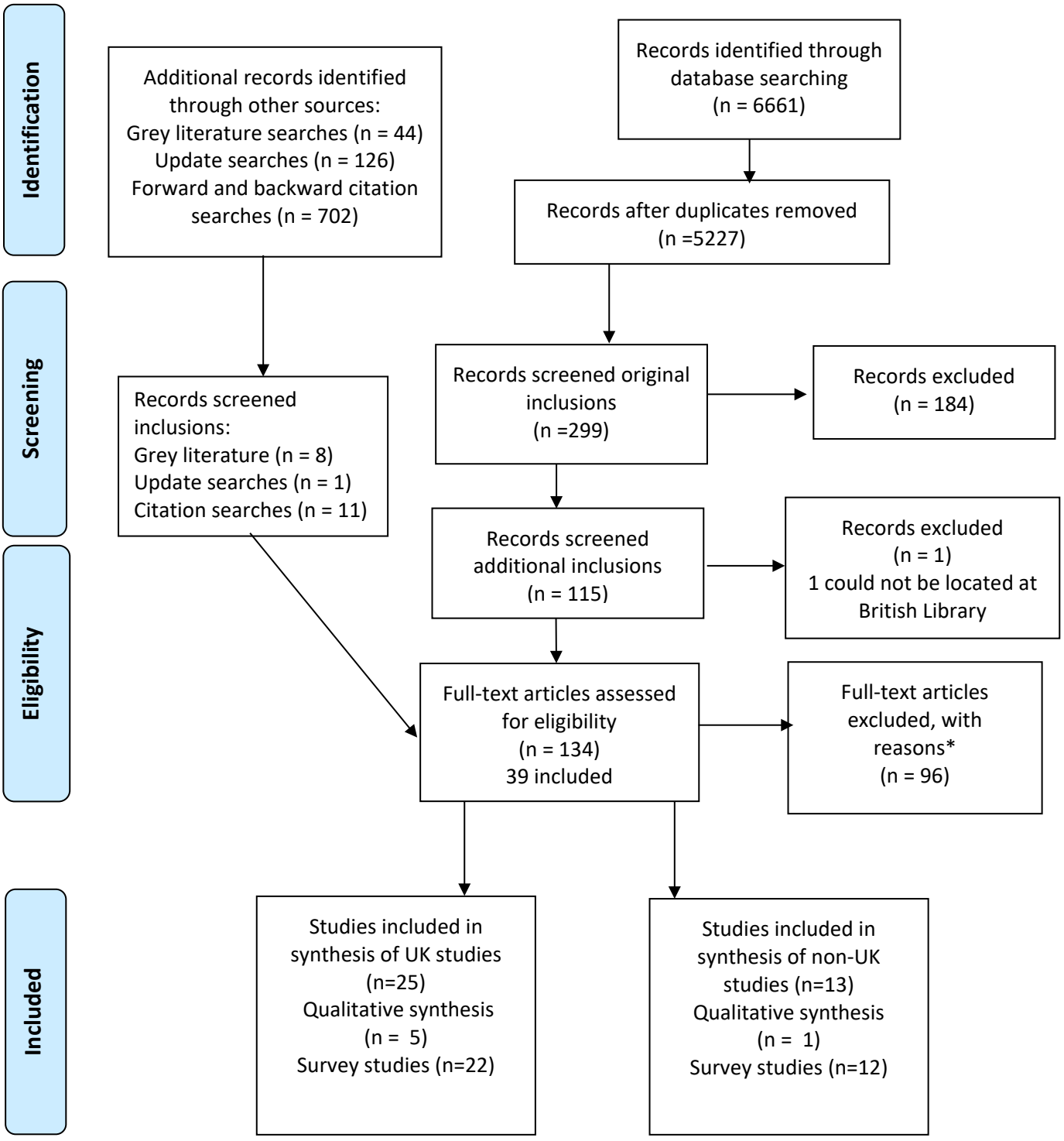
To be included an empirical research study had to have a defined research question(s) or aim, and have clearly described methods of data collection and analysis to answer the question(s). The data had to be either from GPs or about their work/career patterns/decisions. We therefore excluded opinion or

discussion papers even if directly about early retirement, career breaks. Through the process of title and abstract screening, we took the further decision to exclude papers that were specifically about GP retention in extremely rural or remote areas and in very large countries (USA, Aus, Can, NZ) and to exclude papers on job satisfaction and burnout if not explicitly related to study variables around retention/quitting.

Process of identification and selection of studies: The titles and abstracts of search results were screened against the eligibility criteria, with an initial sample being independently screened by two reviewers to establish consistent application of the criteria. Titles and abstracts that could not be excluded were sought as full text articles, and the inclusion criteria applied to these.

Figure 1. PRISMA flow diagram showing process of study selection

* see Appendix C for a list of full-text exclusions with reasons



2.2.4 Context

Sources were excluded if they were not in English language and highly abbreviated source types (such as conference abstracts, power-point presentations) in which the level of detail is insufficient to provide adequate definitions of the study aims, methods, populations and findings.

2.3 Data extraction and quality assessment

2.3.1 Data extraction

Data extraction fields were: study aims; study design; country(+region/city) and data year; commissioning and conducting organisation; conceptual/theoretical framework (if any); data collection methods; populations/sampling (type of GP; age/sex, years since qualification, data analysis methods; factors identified (enablers); factors identified (barriers) associations between factors.

This was piloted, and supplemented where necessary with fields required for summary reporting and for assessing the quality of different study designs (see quality assessment below), relevance to the review question, and other characteristics relevant to the generalisability of findings.

Where included studies include evaluation of or data about a specific strategy or policy affecting early retirement or career break flexibility, information about the components and implementation of the strategy was captured (including, if necessary, through contacting study authors).

Main variables or issues of interest in studies

Factors, either positive (enablers) or negative (barriers), that affect retention of GPs in primary care or their return to work following a career break. The review aimed to gather evidence on actual quitting (behaviour) or intention to quit (attitudes) direct patient care of GPs, and any factors associated with these behaviours and attitudes.

Other relevant data

We also focused on how these factors relate to the individual characteristics of GPs (especially age, and including family situation), or to practice, and system-level characteristics (e.g. pension options, service changes). We also captured information on components of any strategies (described in included studies) which aimed to increase the retention of GPs or support their return to working in primary care.

2.3.2 Risk of bias (study quality) assessment

Study quality for each type of study will be assessed using the internationally approved checklists/appraisal tools suitable for each methodological design.

For studies reporting surveys of GP attitudes and experiences, we adapted the Centre for Evidence-Based Management's (CEBM) quality assessment tool for critically appraising survey studies (Management, 2016). The tool includes questions covering both the conduct and reporting of studies. Our adaptations to the tool comprised: including a supplementary question (to the original selection bias question item) on the adequacy of the sample size; reframing three questions about representativeness of the sample and applicability of the findings to be about representativeness/applicability of/to all GPs or primary care practitioners in the source region or country of the study, and; an additional generalisability question to assess whether the survey's findings can be confidently applied to all GPs in the current UK NHS (see Appendix D).

For assessing the quality of qualitative research studies, we used an adapted version of the Wallace checklist (Wallace et al., 2004).

2.4 Strategy for data synthesis

2.4.1 Methods for synthesis of quantitative survey studies

A narrative description of included studies was performed to summarise the results.

Groups of similar types of sources (in terms of study design/data) were synthesised separately. An overarching synthesis combines the findings and notes where the different types of data corroborate or conflict with each other. Fuller and separate consideration have been given to studies from the UK, and for studies from countries where primary care and general practice is organised in a similar way to the UK's NHS (including remuneration).

2.4.2 Analysis of subgroups or subsets

As stated above, a separate summary and synthesis of factors emerging from UK-based studies was produced.

2.4.3 Methods for synthesis of qualitative studies and evidence

Data extraction and quality assessment of qualitative studies

All five studies based on semi-structured interviews with GPs were examined in-depth.

Methods of qualitative analysis/synthesis

Data analysis and synthesis broadly followed the principles of thematic synthesis (Thomas and Harden, 2008) and was conducted in three stages which overlapped to some degree: the coding of text "line-by-line"; the organisation of these "free codes" into related areas to construct data driven "descriptive themes", and the development of theory driven "analytical" themes through the application of a higher level theoretical framework. Synthesis methods broadly followed guidelines for thematic analysis of textual data collected in the context of primary research. In this case the textual data were study authors' descriptions of their findings as well as primary quotes (quotations) from GPs.

Two key data rich UK papers (Campbell et al., 2015, Doran et al., 2016) were coded by one reviewer (LL) and the descriptive themes were used to create an overall analytical framework consisting of five categories. The same two key papers were independently coded by a second reviewer (DM) and the analytical framework agreed through discussion. This framework was used to code the remaining four semi-structured interview papers/reports (3 UK, 1 of Australian GPs) by one reviewer. The agreed framework was open to further modification to include any additional descriptive themes emerging in subsequent papers. Data, in the form of quotations from the GPs themselves, key concepts or succinct summaries of findings were entered into QSR's NVivo software (v11) for qualitative data analysis.

Descriptive and analytical themes emerging from the qualitative synthesis of semi-structured interview studies conducted in the UK were white boarded. Associations between emerging themes and primary data reported in the qualitative semi-structured interviews (both primary interview data and author interpretation) were considered. It was acknowledged that the identified themes could be relevant to more than one category and this was represented in a pictorial "explanatory model", presented in the form of a flow diagram, in order to answer the review question (Figure 2). The model was independently checked by a second qualitative reviewer (DM) and any suggested modifications were incorporated into

the model. This model makes it possible to “go beyond” the findings of the primary studies and generate additional concepts, understandings and hypotheses relating to factors influencing GPs to quit general practice.

3 Characteristics of included studies

3.1 Overview

Table 1, on the following pages shows the key characteristics of the 23 survey studies of UK GPs published since 1990. Most of the studies were cross-sectional surveys, and surveyed the actual quitting or quitting intentions of GPs in a particular year or month. The earliest survey gathered data from UK GPs in 1991-94 (Taylor et al., 1999), while the five of the most recent surveys were conducted in 2014-15 (Campbell et al., 2015, Dale et al., 2015, Gibson et al., Martin et al., 2016, Doran et al., 2015). The sample sizes of the surveys of UK GPs ranged from 40 to 4,421.

Table 2 shows the key characteristics of the 12 survey studies of non-UK GPs published since 1990, although all but two studies report surveys conducted since 2006. The sample sizes of the non-UK surveys ranged from 178 to 3,906 (although a Canadian modelling study incorporated data from a national survey of over 32,000 physicians).

3.1.1 Geographical coverage of the surveys

Of the 23 surveys of UK GPs, seven surveyed GPs from the whole of the UK (Baker, 2000, Evans et al., 2002, Gibson et al., Martin et al., 2016, Taylor et al., 1999, Taylor et al., 2008, Young et al., 2001), two from England and Scotland combined (Scott et al., 2006, Simoens, 2002), two surveyed GPs from the whole of England (Hann et al., 2011, Sibbald et al., 2003), five surveyed GPs in a particular region or city of England (Baker et al., 1995, Campbell et al., 2015, Dale et al., 2015, Hutchins, 2005a, Luce et al., 2002), and five surveyed GPs in Scotland (Chambers et al., 2004, French, 2005, French, 2006, McKinstry et al., 2006, Simoens et al., 2002).

Of the 12 surveys conducted of primary care doctors in other economically developed countries, four were of GPs in Australia (Brett et al., 2009, Norman and Hall, 2014, Pit and Hansen, 2014, Shrestha and Joyce, 2011), two of GPs in the Republic of Ireland (Nugent et al., 2003, O'Kelly et al., 2008), two of GPs in New Zealand (McComb, 2008, Royal College of General Practitioners of New Zealand, 2015), and two of family physicians in Canada (Dewa et al., 2014, Woodward et al., 2001), and there was one survey of GPs and GP trainees in Finland (Sumanen et al., 2012) and one survey of GPs who had already retired early in the Netherlands (Van Greuningen et al., 2012).

3.1.2 Characteristics of GPs surveyed

Most of the surveys of UK GPs were samples from all practising GPs in the country or a region, regardless of age, year of qualification or contract type/mode of employment within the practice. A number of the surveys specifically surveyed only GP principals (i.e. practice partners) (Chambers et al., 2004, French, 2006, Sibbald et al., 2003), or only recruited GP principals and non-principals (but not, for example, locums) (McKinstry et al., 2006, Simoens, 2002, Simoens et al., 2002). Only four studies surveyed any GPs who had already quit patient care: one of the older UK studies surveyed GPs who had left general practice, between 1996 and 1997 (Young et al., 2001), Baker et al surveyed vocationally trained GPs who were not currently practising as GP principals (Baker et al., 1995), Taylor et al surveyed new entrant GPs (35 years old or less) including the 252 of them who had left within 2 years (Taylor et al., 1999), and Hann et al used annual GP census data over a 5 year period to examine what characteristics predicted GPs who left direct patient care (Hann et al., 2011).

In terms of age and gender mix, most UK studies reported a mean age (or median age-band) of between 40 and 55 years. However, two studies had younger respondents, because they set out to survey recently qualified GPs (Baker et al., 1995, mean age 37 for men, 34.5 for women, Taylor et al., 1999, mean age 30.4yrs). Two surveys specifically targeted older GPs: Chambers et al (2004) only surveyed unrestricted principals aged over 55 (mean age not reported), while Luce et al (2002) surveyed GPs aged 45 and over (mean age 52yrs). Female GPs accounted for between 29% and 75% of the GPs surveyed, but tended to account for a higher proportion of GPs in the later surveys.

Of the 12 surveys of GPs/primary care physicians outside the UK, most were of practising GPs (and therefore intentions to quit or reduce hours), but three studies were of GPs who had actually quit and explored their reasons for quitting general practice (Nugent et al., 2003, O'Kelly et al., Van Greuningen et al., 2012). The mean age of GPs in the non-UK surveys was between 48 and 52 years old, except the Nugent et al (Nugent et al., 2003) study of GP trainees who had left GP work (mean age 34 years) and the Van Greuningen et al (2012) survey of GPs who had already retired before the statutory age of retirement (mean ages at retirement of 58 for men and 54 for women). The proportion of GPs in the surveys who were female varied considerably, from only 27% of GPs aged 45-65 years in Western Australia (Brett et al., 2009), to 70% of GPs in Ireland who graduated between 1997 and 2003 (O'Kelly et al.).

Table 1. Characteristics of the UK survey studies and the GPs included

Study	Year of survey(s)	Country or Region	Types of GPs surveyed	No. respondents (Response rate)	Age of GPs (mean, in years; SD if reported)	% female
Baker et al (1995)	NR	England (Trent)	Vocationally trained GPs not currently practising as GP Principals	166 (47.3%)	37 (men) 34.5 (women)	60%
Baker et al (2000)	1998	UK	GP principals and non-principals	3969 (66.5%)	under 25 1% 25-34 31.5% 35-44 56.9% 45-54 7.7% 55-64 1.2% 65+ 0.2% NR 2.6%	49.20%
Campbell et al 2015(2015)	2014-15	England (South West)	All GPs	529 (56.0%)	NS	66.5%
Chambers et al (2004)	NR	Scotland	Unrestricted principals, aged over 55 years	348 (72%)	NR (All over 55)	NR
Dale et al (2015)	2014-2015	England (West Midlands)	All GPs	1192 (NR)	NR	44.30%
Doran et al (2015)	2014	England	Early leavers age <50 years	143 (35.0%)	Median 40-44yrs	50.3%

Study	Year of survey(s)	Country or Region	Types of GPs surveyed	No. respondents (Response rate)	Age of GPs (mean, in years; SD if reported)	% female
Evans et al (2002)	1994, 1995, 1998, 1999	UK	All GPs; 24,11,7 & 6 years since qualification	NR (71%-78%)	NR	1974 graduates 38.5% 1983 graduates 51.2% 1988 graduates 55.5% 1993 graduates 67.6% Total 53%
French et al (2005)	2002	Scotland	GP principals	390 (55.0%)	39 (SD 9)	75%
French et al (2006)	2002	Scotland	All GPs	924 (50.0%)	45 male 42 female	39%
Gibson et al (2015)	2015	UK	All GPs	1172 (cross sectional, 34.27%) 1576 (longitudinal, 63.75%)	<35 8.79% 35-39 12.88% 40-44 15.4% 45-49 16.28% 50-54 20.89% 55-59 18.8% 60+ 6.96%	cross-sectional sample 50.35%
Hann et al	2001-2006	England	GPs aged <50 years	1174 (67%)	NR	NR
Hutchins (2) (2005b)	2002	England (London)	All GPs in sampled general practices	62 (84%)	53% between 40 & 49 yrs	35%
Luce et al (2002)	2000	England (Northern)	GPs aged over 45	518 (72.5%)	51.8	21%
Martin et al (Health Foundation)(2016)	2015	UK	All GPs	1001 (39.4%)	NR	NR

Study	Year of survey(s)	Country or Region	Types of GPs surveyed	No. respondents (Response rate)	Age of GPs (mean, in years; SD if reported)	% female
McKinstry et al (2006)	2004	Scotland	GP principals & non-principals	2541 & 749 (67.2% & 65.2%)	NR	NR
Scott et al (2006)	2001	England and Scotland	GP principals, salaried GPs & GP locums (GP principals, Non-principals and personal medical Service GPs in Scotland)	1968 (44.0%)	Under 35: 14%, 35-39: 19%, 40-44 21%	32%
Sibbald et al (2003)	1998 & 2001	England	GP principals	790 from 1998 and 1159 from 2001 (67%)	43.75 in 1998 44.35 in 2001	31.3% in 1998 29.4% in 2001
Simoens (1) (2002)	2001	Scotland	GP principals and non-principals	802 (56.0%)	GP principals - 45 GP non-principals - 30 PMS GPs - 43	principals 38% non-principals 57% PMS GPs 60%
Simoens et al (2)(2002)	2001	England and Scotland	GP principals and non-principals	4421 (45.0%)	44 English 43 Scottish	32% England 37% Scotland
Taylor, D et al (1999)	1991-94	UK	New entrant GPs 35 years old or less, (including the 252 who left within 2 years)	1933 incl. 252 leavers (NA)	30.4 SD 2.04	42.6
Taylor, K et al (2008)	2004	UK	All doctors who qualified 1977 (GP results reported separately)	864 (72.0%)	51	36.50%
Young et al (2001)	1998	UK	GPs who were on GP census in 1996 but not 1997	613 (57.3%)	<39 19.2% 40-49 11% 50-59 19.8% 60+ 42.5%	35.40%

NR = Not Reported; SD = Standard Deviation; PMS = Primary Medical Service

Table 2. Characteristics of the international (non-UK) survey studies and primary care practitioners included

Study 1st author, year	Year of survey(s)	Country (State)	Types of GPs surveyed	No. respondents	Age of GPs (mean, in years; SD if reported)	% female
Brett, 2009	2007-2008	Australia (Western Australia)	Aged 45-65 years	178	mean 52.4, SD=5.2; median 51 (range 48-56)	27%
Dewa, 2014	2007-2008	Canada	All	32,026	<45 yrs, mean age 38 45-54 years, mean age 50 55-64 years, mean age 59 Overall mean approx. 48.4	NR
McComb, 2008	2006	New Zealand	All	566	30-39 8% 40-49 44% 50-59 37% 60 plus 11%	38.3%
Norman, 2014	2010/2011	Australia	All	3377/2720	49.54 (SD 11.31)	49%
Nugent, 2003	1999	Ireland	GP trainees who have left GP work	209/36	mean age 34 for women and 35 for men	61%
O'Kelly, 2008	2007	Ireland	GP graduates 1997-2003	245	NR	70%
Pit, 2014	2011	Australia (NSW)	All	92	51	40%
RNZCGP, 2015	2015	New Zealand	All	2,486	50 (men 53; women 47)	53%
Shrestha, 2011	2008	Australia	All	3,906	49.5	45.6%
Sumanen, 2012	2008	Finland	GPs and GP trainees	559	NR	68%
Van Greuningen, 2012	2002+2007	Netherlands	Already retired	405	Mean retirement age: men 58, women 54	40%
Woodward, 2001	1993+1999	Canada	All	293	NR	57.3%

NR = Not Reported; SD = Standard Deviation

3.2 Overview of the UK questionnaire surveys

3.2.1 Coverage of different types of quitting direct patient care

Table 3 below summarises the broad quitting construct investigated together with the personal, job and other GP or practice characteristics. Appendix E shows the specific quitting constructs (and verbatim questions) in each study and the potential determinants of quitting for which data was collected.

Among these studies, 13 explicitly focussed on retirement intentions (either within a certain number of years or intended retirement age), and four included GPs who had already retired or quitted general practice. One study, a longituidinal cohort study by Hann et al (2011), was the only study that included both actual quitting status and previous intention-to-quit data for the same group of GPs. Nine surveys investigated factors associated with intentions to reduce hours or take up part-time working, and four surveys included a focus on taking career breaks.

Table 3. Broad quitting constructs and potential factors in GP survey studies (UK-based studies)

	Quitting construct investigated						Personal			Job characteristics						Household			Area				
Study	**Actual quitting/retention**	**Intention to quit within 5 years**	**Planned age of retirement**	**Part-time/flexible working**	**Taking career break**	**Other**	**Age**	**Sex**	**Ethnicity**	**Contract type /partner/locum etc.**	**Practice/list size**	**Working**	**Job satisfaction**	**Job stressors**	**On call/Out of**	**Income**	**Marital/family**	**Social deprivation**	**Region/Country**	**Urban/rural**	**Policy/organisational changes**	**Other**	**Notes:**
Hann et al 2010	●	a ●					●	●	●				●				●					●	a. Intention to leave as a predictor of leaving
Taylor, D et al 1999	●						b	●			●							●		●			b. NB cohort all same age
Young et al 2001	●						●	●															
Doran et al 2015	●																					● c ● d	c. Stated reasons for having left (list/closed questions + other) d. Barriers and facilitators to returning to work
Martin et al 2015 (Health Foundation)		● e					●																e. & determinants of work-related stress
Dale et al 2015		● f		● f	● f																	● g	f. Combined question g. List of factors that might influence/reverse decision
Gibson et al 2015		●					●	●															

	Quitting construct investigated						Personal			Job characteristics						Household			Area				
Study	**Actual quitting/retention**	**Intention to quit within 5 years**	**Planned age of retirement**	**Part-time/flexible working**	**Taking career break**	**Other**	**Age**	**Sex**	**Ethnicity**	**Contract type /partner/locum etc.**	**Practice/list size**	**Working**	**Job satisfaction**	**Job stressors**	**On call/Out of**	**Income**	**Marital/family**	**Social deprivation**	**Region/Country**	**Urban/rural**	**Policy/organisational changes**	**Other**	**Notes:**
Scott et al 2006		●					●	●	●	●	● h				●	●	●	●	●	●			h. List size
Simoens et al 2002 (2)		●					●	●	●	●	●	●	●	●	●	●	●	●	●	●			
Sibbald et al 2003		●					●	●	●	●	●				●	●	●	●	●	●			
Simoens et al 2002 (1)		● i		● i			●	●	●	●	● j					●		●		●		●	i. Combined question j. Group/solo practice
Campbell et al 2015		●			●		●	●	●	●	●							●		●		● k	k. Region of graduation
Baker et al 2000			● l	● l			● m	●		●												●	l. Preferred m. Qualification cohort
Evans et al 2002			●	●	●		Free-text reasons for reduced time commitment to being a GP																
Chambers et al 2004			●																			● n	n. Any reasons (open question)
French et al 2005			●	● o																		● p	o. Intention to reduce hours p. inducement factors
McKinstry et al 2006			●	●				●														● q	q. Any or all reasons given for leaving practice

	Quitting construct investigated						Personal			Job characteristics						Household			Area				
Study	**Actual quitting/retention**	**Intention to quit within 5 years**	**Planned age of retirement**	**Part-time/flexible working**	**Taking career break**	**Other**	**Age**	**Sex**	**Ethnicity**	**Contract type /partner/locum etc.**	**Practice/list size**	**Working**	**Job satisfaction**	**Job stressors**	**On call/Out of**	**Income**	**Marital/family**	**Social deprivation**	**Region/Country**	**Urban/rural**	**Policy/organisation al changes**	**Other**	**Notes:**
French et al 2006			●	●				●															
Luce et al 2002			● s									●	●	●	●							● t	s. Earlier or later than planned t. List of stated factors that would delay retirement
Taylor, K et al 2008				●									●										
Hutchins 2005 (2)					● u																	● v	u. Prolonged study leave v. Perceived benefits
Baker et al 1995						●	●			●												● w	w. Cohort (year) of qualification

Table 4. Survey data relating to quitting patient care (UK studies)

Lead author	Year	Quitting constructs studied	Quitting variable(s)/ questions (verbatim)	Determinants of/associations with quitting assessed in the study
Baker	1995	Not working as GP principal	"doctors who are vocationally trained but not currently practising as principals in general practice" p1301	22 reasons for not working as principals currently, (on p 1302)
Baker	2000	Not working as GP principal, plans for retirement	Intended retirement age (5-year bands); Preferred time commitment per week (5 hour bands)	Gender, Age (10-year age bands), Principal/non-principal status, GP qualification cohort (1986, 1991, 1996).
Campbell	2015	Intention to quit within 5 yrs, and intention to take a career break	Intending to quit direct patient care within 5 years, intending to take a career break within 5 years	Age, gender, ethinic group, region graduated, position, practice deprivation, practice size, practice location
Chambers	2004	Intention to retire before age 60	Planning to retire before age 60	NS (probably only open question about reasons for intention to retire early)
Dale	2015	Intention to quit within 5 yrs, and intention to take a career break	Whether intend to leave/take career break in next 5 years, factors that might influence/reverse decision.	List of factors that might influence/reverse decision taken from recent media coverage and policy docs, plus free text comments. Workplace influences and individual motivators.
Evans	2000	All reasons/types of quitting direct patient care	Leaving or having left GP work in UK; working less than full time, career breaks, early retirement.	Job satisfaction, morale - all based on comments no quantitative data given
French	2005	Retirement intentions & intention to reduce hours	Stated wish to reduce no. of sessions worked; planned retirement age.	'Inducement factors' (implicitly, that would induce GPs "to consider working longer" - that is, beyond their planned retirement age)
French	2006	Early/later retirement and hours reduction	Full time and part time working by gender. Intended retirement age. Willingness to postpone retirement (under selected conditions)	Warr-Cook-Wall job satisfaction scale (10 items) gender, whether spouse is doctor or not

Lead author	Year	Quitting constructs studied	Quitting variable(s)/ questions (verbatim)	Determinants of/associations with quitting assessed in the study
Gibson	2015	Job satisfaction, working hours, intention to quit by age and sex.	Intention to quit direct patient care in the next 5 years.	Age, sex, hours of work, contract type, practice size; job stressors on 14 item scale; job attributes on 15 item list; likelihood of retiring, increasing or reducing work hours, leaving in next 5 years; job satisfaction on 9 item Warr-Cook-Wall scale.
Hann	2010	Intention to leave (NHS) general practice & actual quitting (exact question unclear)	Physician not present on any census from 2002-2006, thus deemed to have left family practice in the NHS.	Intention to leave family practice as a cause of actually leaving. Job satisfaction as a cause of leaving family practice.
Hutchins (2)	2005	Prolonged study leave (career breaks)	Prolonged study leave full or part time; career intentions for next 5 years	Whether plan to continue as principal after study leave; perceived benefits of study leave
Luce	2002	Early/later retirement and hours reduction	Factors influencing retirement, factors which might delay retirement, age planned and ideal age for retirement	12 factors influencing retirement decision (great, moderate or no influence) p306; 14 factors influencing later retirement (before, at or after 60) p307
Martin (Health Foundation)	2015	Stress	Intend to leave within 5 years	Job satisfaction and stressors
McKinstry	2006	Part time, reduced hours	Career intentions over next 5 years, including intention to stay in NHS.	Expectation of change in workload and number of sessions in next 2 years, retirement intentions.

Lead author	Year	Quitting constructs studied	Quitting variable(s)/ questions (verbatim)	Determinants of/associations with quitting assessed in the study
Scott	2006	Intention to quit in next 5 years	Quitting intention: "likelihood that a GP would leave direct patient care in the next five years (5-point Likert scale)"	Only given in regression tables (not verbatim): Partner employment status, income, household income, list size, Hours on call per week, principal/other status, urban/rural, deprivation/affluence, married status, no. of children, ethnicity (white/non-white).
Sibbald	2003	Retirement intentions & intention to reduce hours	"likelihood of their leaving direct patient care (primary or hospital) within five years" p1 Intended retirement age (5-year bands) Table 1 p2	7 point job satisfaction scale, age, practice location and size, gender, ethnicity, no of children, hours worked
Simoens (1)	2002	Intention to quit, stress	Intention to reduce working hours or quit in next five years.	Job satisfaction with 9 aspects of work (Warr-Cook-Wall scale); job stressors on 31 item scale; gender, age, ethnicity, hours worked per week, type of GP, household income, no of GPs in practice, practice location, level of deprivation.
Simoens (2)	2002	Job satisfaction, Intention to quit	Intentions to quit ("likelihood that a GP would leave medical work entirely within the next 5 years" p.17)	Demographic traits, job satisfaction scale (Warr-Cook-Wall), 30-item job stresses scale, job attributes, attitude to work, effect of institutional changes, practice characteristics
Taylor, D	1999	Predictors of retention, work life balance	"young, new entrant GPs remaining in their initial health authority for two years or more." p277	Practice size, sex, deprived areas, innner/outer London
Taylor, K	2008	Part-time GPs	Full time and part time working.	Job satisfaction
Young	2001	reasons for leaving in past year	On annual GP census in October 1996 but had left by October 1997	Importance of 12 job related and 9 personal factors in prompting them to leave age, gender

3.2.2 The quality of included survey studies of UK GPs

Table 5, on the following page, shows how each of the studies was assessed against each of the items in our adapted CEBM (Centre for Evidence-Based Management) critical appraisal tool. Most of the studies were of good quality in relation to key question items – such as the appropriateness of the research survey methods for answering the stated question, but with many having limitations in relation to: the pre-study determination of the sample size; the assessment of the statistical significance of relevant associations (and presentation of confidence intervals where relevant). All but four of the studies did not conduct multivariable analyses. Most analyses were restricted to presenting the associations between two or three variables, typically in a contingency table. Therefore, with the exception of the multivariable analyses that included a wide range of possible covariates/determinants of quitting, all other studies were deemed not to to have accounted for all possible confounding variables.

In terms of reporting quality, a substantial minority of studies did not clearly report how the sample was obtained (and therefore, potential selection bias) or whether the sample obtained was representative of all GPs in that region or country. Related to this, response rates were generally poor, with only 5 having a satisfactory response rate (of over 70%), 5 having unsatisfactory response rates (<50%), and 2 studies which did not report the response rate.

Study generalisability was assessed in two stages/items; firstly, in terms of whether the results could be confidently applied to the GPs in the source region or country, in the year the survey was conducted; and secondly, whether the results could be confidently applied to all GPs in the UK NHS in 2016 (which is the policy context of this systematic review).

Table 5. Overview of the assessed quality of UK survey-based studies

	Baker 1995	Baker 2000	Campbell 2015	Chambers 2004	Dale 2015	Doran 2015	Evans 2000	French 2005	French 2006	Gibson 2015	Hann 2010	Hutchins 2005	Luce 2002	Martin 2015	McKinstry 2006	Scott 2006	Simoens 2002(2)	Simoens 2002(1)	Sibbald 2003	Taylor,D 1999	Taylor,K 2008	Young 2001
Did the study address a clearly focused question/study aims?	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	P	Y	Y	Y	Y	Y	Y	Y
Is the research method appropriate for answering the research question/aims?	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Was the questionnaire piloted prior to the main survey (or previously validated/used)?	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	CT	Y	Y	Y	Y	CT	N	CT	Y	N	P	Y
Is the method of selection criteria of the subjects clearly described?	Y	Y	Y	Y	Y	Y	Y	Y	P	Y	N	Y	Y	CT	Y	Y	P	Y	Y	Y	Y	P
Could the way the sample was obtained introduce (selection) bias?**	P	N	P	N	CT	P	N	CT	P	CT	CT	N	N	CT	P	N	CT	N	P	N	N	CT
Was the sample size adequate for generalisability?	P	Y	Y	P	Y	Y	Y	P	Y	Y	Y	P	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Was the sample of subjects representative with regard to the all GPs/PCPs in that region or country?	N	Y	CT	CT	P	Y	Y	CT	Y	P	P	CT	P	CT	P	Y	CT	Y	Y	Y	Y	P
Was the sample size based on pre-study considerations of statistical power?	N	N	N	N	N	N	N	N	N	CT	CT	N	N	CT	N	CT	N	N	N	N	N	N
Was a satisfactory response rate achieved?	N	P	P	Y	CT	N	Y	P	P	P	P	Y	Y	N	P	N	N	P	P	CT	Y	P
Were the variables for capturing quitting/intention to quit clearly described and likely to be valid and reliable?	Y	Y	Y	P	Y	Y	P	Y	P	Y	P	P	P	Y	P	Y	Y	Y	P	Y	Y	Y
Were the variables for capturing potential factors clearly described, comprehensive, valid and reliable?	Y	Y	Y	P	Y	Y	N	Y	P	Y	Y	P	Y	Y	P	Y	Y	Y	Y	Y	Y	Y
Was the statistical significance (of relevant associations) assessed?	Y	Y	Y	N	Y	N	N	Y	Y	N	Y	N	Y	N	Y	Y	Y	Y	Y	Y	Y	Y
Are confidence intervals given for the main results?	N	N	Y	N	Y	N	N	Y	Y	N	Y	N	N	N	N	N	P	N	N	Y	Y	N
Could there be confounding factors that haven't been accounted for?**	Y	P	P	Y	P	Y	Y	Y	P	Y	CT	Y	Y	P	Y	Y	N	N	N	N	Y	P
Can the results be confidently applied to all GPs in the source region and country?	N	P	P	Y	CT	P	Y	P	P	P	P	CT	P	CT	P	P	N	P	P	Y	P	P
Can the results be confidently applied to all GPs in the UK NHS in 2016?	N	P	P	P	P	P	P	P	P	P	P	P	P	CT	P	P	N	P	P	P	P	P

Key: Y = Yes; N = No; P – Partly; CT – Can't tell. Darker shading denotes lower study quality or reporting for that item (**note that two items are negatively worded, so a Yes indicates poorer quality and a No better quality for these criteria)

3.3 Overview of the non-UK questionnaire surveys

3.3.1 Coverage of different types of quitting direct patient care

Of the 12 non-UK survey studies, most of the studies (11) were cross-sectional surveys, and surveyed the quitting intentions of GPs at a particular point in time. One was based on panel survey data from the Australian MABEL study. Of the non-UK studies, 5 explicitly focussed on retirement intentions, 3 focussed on actual quitting, and 5 on preferences or intentions to reduce hours or work part-time.

Table 6 on the following page shows the types of quitting from direct patient care that were assessed in the included studies, and the types of variable or factor with which associations with quitting were explored.

Table 6. Broad quitting constructs and potential factors in GP survey studies (non-UK-based studies)

	Quitting construct investigated						Personal			Job characteristics						Household			Area				
Study Author, Year & Country	**Actual quitting/retention**	**Intention to quit within 5 years**	**Planned age of retirement**	**Part-time/flexible working**	**Taking career break**	**Other**	**Age**	**Sex**	**Ethnicity**	**Contract type /partner/locum etc.**	**Practice/list size**	**Working hours/PT/FT**	**Job satisfaction**	**Job stressors**	**On call/Out of hours**	**Income**	**Marital/family status**	**Social deprivation**	**Region/Country**	**Urban/rural**	**Policy/organisational changes**	**Other**	**Notes:**
Van Greuningen 2012, Netherlands	●											● a	●	● b							●	● c	a. 'Subjective workload' b. Emotional exhaustion c. Demands from patients, media & society
O'Kelly 2008, Ireland	●						Self-reported reasons for leaving general practice Self-reported factors that would have kept them in practice																
Nugent 2003, Ireland	●						Self-reported reasons for leaving general practice																
McComb 2008, New Zealand		●											●									● d	d. Commitment
Dewa 2014, Canada		● e		● e			●						●	● f								●	e. Retirement plans (next 2 years) & plans to reduce clinical hours f. Exhaustion & burnout
Brett 2009, Australia			● g									●	●	●		●	●					● h ● i	g. Reasons would retire early & Reasons would stay on h. Health reasons/healthy retirement i. Fear of incompetence

	Quitting construct investigated						Personal			Job characteristics						Household			Area				
Study Author, Year & Country	**Actual quitting/retention**	**Intention to quit within 5 years**	**Planned age of retirement**	**Part-time/flexible working**	**Taking career break**	**Other**	**Age**	**Sex**	**Ethnicity**	**Contract type /partner/locum etc.**	**Practice/list size**	**Working hours/PT/FT**	**Job satisfaction**	**Job stressors**	**On call/Out of hours**	**Income**	**Marital/family status**	**Social deprivation**	**Region/Country**	**Urban/rural**	**Policy/organisational changes**	**Other**	**Notes:**
Pit & Hansen 2014, Australia			●				●	●			●		● j	● k								● l	j. Effort-Reward imbalance k. Burnout, Presenteeism/ Absenteeism, Sleep problems, Health, l. Years in general practice
Norman & Hall 2014, Australia				● m			●	●		●		●	●		●	●	●			●		●	m. Desire to & actual reduction in hours
Shrestha 2011, Australia				●								●										● n	n. Work-life balance
RNZCGP 2015, New Zealand				●			Stated reasons for working part-time (5 pre-specified options)																
Woodward 2001, Canada				●				●									●			●		● o p	o. Partner is a physician p. Partner working FT
Sumanen 2012, Finland						● q		●		●							●					● r s	q. Intended future job r. Occupation of spouse s. Occupation of mother & father

Table 7. Survey data relating to quitting patient care (non-UK studies)

Lead author (Country)	Year	Quitting constructs studied	Quitting variable(s)/ questions (verbatim)	Determinants of/associations with quitting assessed in the study
Brett	2009	Early retirement intentions, sessions per week	no of sessions worked per week; plans to retire before age 65	Age, gender, 9 options why leaving early, 7 options that might encourage to stay
Dewa	2014	Retirement/ reduced hours	Plan to retire. Plan to reduce clinic hours	Professional dissatisfaction using 5 point scale (possibly Likert, not stated); burnout using 9 items from Maslach Burnout Inventory; age.
McComb	2008	Satisfaction and commitment vs intention to quit	Intention to leave general practice within 6 months and within 5 years	Demographic (gender, age, life status, number of children, number of family members who are also GPs, practice ownership, income, hours worked). Psychological (satisfaction with general practice and commitment to general practice) - scored with 5 point Likert scale. Commitment scale had 18 questions, satisfaction scale had one item only.
Norman	2014	Part time, reduced hours	Desire to reduce workload and success in making that change. Stated intention to reduce workload vs actual reduction in workload after 1 year	Age, sex, health, family circumstances, work satisfaction, work hours, whether do on-call work, business relationship with practice, practice location, income, density of GPs, patient population.
Nugent	2003	Career change	Whether remained in general practice	Factors that could impede career pathway in general practice
O'Kelly	2008	No longer working as GP and reasons given	Graduates no longer working as GPs	Gender, family commitments. Clinical sessions per week and maternity leave
Pit	2014	Early retirement, burnout	Planned age of retirement from direct patient care	Burnout and occupational health measures: Maslach Burnout Inventory (9 item Emotional Exhaustion subscale only); single item job saitsfaction measure; 5 item version of Effort-Reward Imbalance Questionnaire; 3 item version of Work Ability Index; 6 item Kessler Psychological Distress Scale; global health question from SF-36

Lead author (Country)	Year	Quitting constructs studied	Quitting variable(s)/ questions (verbatim)	Determinants of/associations with quitting assessed in the study
RNZCGP	2015	Hours worked per week, reasons for reduced hours, retirement	Number working part time, intended working hours in 5 years, reduction of hours before retirement. Intention to retire in 10 years	Gender, age, reasons for working part time, urban and rural
Shrestha	2011	Work life balance and intention to quit	Intention to quit within 5 yrs – 5-point Likert scale (very likely etc.). Intention to reduce hours	Work-life balance satisfaction Likert scale
Sumanen	2012	Intention to quit and personal or work characteristics	What work do they think will they be doing in year 2020?	Job satisfaction on 5 point Likert scale. And what type of work they do now
Van Greuningen	2012	Reasons for early retirement, reduced hours	2 questions about no of working hours on average and out-of-hours work. Whether left GP work before retirement age	8 statements about job satisfaction on Likert scale. Dutch version of Maslach Burnout Inventory with 7 items. 6 questions about subjective workload. 6 questions about external control impact on job. 4 questions on demands from gov and insurers. 5 item scale on demands of societal developments. 4 items on demands of patients. 4 statements on health resons for early retirement. 5 questions on leisure and family reasons. 6 questions on career change as reason for early retirement
Woodward	2001	Work patterns and flexible working	Current status (whether in practice; hours worked	Gender, spouse working full time, child younger than 6, no children, spouse is physician, rural practice

3.3.2 The quality of included survey studies of non-UK GPs/primary care physicians

Table 8 on the following page, shows how each of the studies was assessed against each of the items in the adapted CEBM critical appraisal tool. Most of the studies were of good quality in relation to key question items – such as the appropriateness of the research survey methods for answering the stated question, but with many having limitations in relation to: the pre-study determination of the sample size; the assessment of the statistical significance of relevant associations (and presentation of confidence intervals where relevant). All but six of the studies did not conduct multivariable analyses. These analyses were inevitably restricted to presenting the associations between two or three variables, typically in a contingency table. Therefore, with the exception of the multivariable analyses that included a wide range of possible covariates/determinants of quitting, all other studies were deemed not to to have accounted for most important possible confounding variables.

In terms of reporting quality (quality assessment category: Can't Tell – CT shaded cells in the Table), a significant minority of studies did not clearly report how the sample was obtained (and therefore, potential selection bias) or whether the sample obtained was representative of all GPs in that region or country. Related to this, response rates were generally poor, with only 3 having a satisfactory response rate (of over 70%), 2 having unsatisfactory response rates (<50%), and the rest having reasonable response rates of between 50% and 70%.

Study generalisability to the quitting behaviour and retention policies for UK general practitioners was judged as limited, mainly because the profession of general practice and organisation of general practices is quite different in Australia, Canada, New Zealand, the Netherlands and Ireland than in the UK and two of the surveys are over ten years old.

Table 8. Overview of the assessed quality of non-UK survey-based studies

	Brett 2009	Dewa 2014	McComb 2008	Norman 2014	Nugent 2003	O'Kelly 2008	Pit 2014	RNZCGP 2015	Shrestha 2011	Sumanen 2012	Van Greuningen 2012	Woodward 2001
Did the study address a clearly focused question / study aims?	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Is the research method appropriate for answering the research question/aims?	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Was the questionnaire piloted prior to the main survey (or previously validated/used)?	P	Y	N	Y	Y	N	N	Y	N	N	N	N
Is the method of selection criteria of the subjects clearly described?	Y	Y	P	Y	Y	Y	P	Y	Y	Y	Y	Y
Could the way the sample was obtained introduce (selection) bias?**	N	CT	CT	N	N	N	CT	N	N	N	N	N
Was the sample size adequate for generalisability?	P	Y	Y	Y	P	P	P	Y	Y	Y	P	P
Was the sample of subjects representative with regard to the all GPs/PCPs in that region or country?	CT	P	P	Y	Y	Y	CT	Y	Y	Y	CT	CT
Was the sample size based on pre-study considerations of statistical power?	N	N	N	N	N	N	N	N	N	N	N	N
Was a satisfactory response rate achieved?	P	N	P	Y	Y	Y	P	P	N	P	P	P
Were the variables for capturing intention to quit clearly described and likely to be valid and reliable?	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	P
Were the variables for capturing potential factors clearly described, comprehensive, valid and reliable?	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Was the statistical significance (of relevant associations) assessed?	N	Y	Y	Y	N	N	Y	N	Y	Y	Y	Y
Are confidence intervals given for the main results?	Y	Y	Y	Y	P	N	Y	N	Y	Y	Y	Y
Could there be confounding factors that haven't been accounted for?**	Y	Y	N	N	Y	Y	N	Y	N	N	CT	N
Can the results be confidently applied to all GPs in the source region and country?	P	N	P	Y	Y	P	CT	P	N	P	CT	CT
Can the results be confidently applied to GPs in the UK NHS in 2016?	CT	P	P	Y	P	P	CT	P	N	P	CT	CT

Key: Y = Yes; N = No; P – Partly; CT – Can't tell. Darker shading denotes lower quality or reporting for that item (**note that the two shaded question items are negatively worded, so a Yes indicates poorer study quality and a No better study quality for these items)

3.4 Overview of the qualitative research studies and data

3.4.1 Interview studies with GPs

Five studies based on qualitative semi-structured interviews with practising or retired British GPs were found, all conducted in England. A further qualitative semi-structured interview, with practising GPs who were working part-time in clinical practice in Australia was found. The main characteristics of these studies, and the GPs interviewed within them, are shown in Table 9 on the following page.

Two of the papers reporting studies from England actually report findings from largely the same set of interviews, with the later paper including a larger sample of interviewees, intentionally containing more female GPs and more aged 50-55 (who were underrepresented in the first report, Campbell et al., 2015, Sansom et al., 2016). The 2016 study by Doran and colleagues focussed on why GPs had left medical practice (Doran et al., 2016), whereas the other four studies were wholly or dominantly with practising GPs, and therefore about their intentions to quit patient care or retire.

All of the semi-structured interviews were quality appraised using an adapted Wallace checklist and found to be of reasonable quality (Hutchins (2005); Newton (2004)) to good quality (Campbell (2015) , Samson (2016), Doran (2016); Dwan (2014)) (see more detail on the quality assessment in section 6.1.1).

Table 9. Characteristics of qualitative interview studies and included GPs

Study	Year of survey(s)	Country or Region	Types of GPs surveyed	Aim of study	No. GPs (interview type)	Age of GPs	% female
Doran et al 2016	NS	England	Early leavers age <50 years	To explore the reasons why GPs leave general practice early	21 (by phone)	median age-band 40-44 yrs	50.30%
Hutchins (1) 2005	NS	England (London)	GP principals near retirement age	Considers the reasons many GPs are wishing to take early retirement, and measures to help retain them	20 (at surgery)	NS	55%
Newton et al 2004	2001 (implied)	England (Northern)	Over 45, subgroup from Luce 2002	To describe "Plans, reasons for, and feelings about retirement"	21 (at surgery or GP home, except 2 by phone)	All over 45	38%
Sansom et al 2016*	2015	England (South West)	Experienced GPs 50-60 years old (20 still working, 3 retired)	To investigate the reasons behind intentions to quit direct patient care among experienced general practitioners (GPs) aged 50-60 years	23* (by phone)	Age range 51-60 years	39%
Campbell et al 2015*	2014-15	England (South West)	Experienced GPs 50-60 years old intending to retire in next 5 years (n=14); GPs who took early retirement in last 5 years (n=3); 15 partners, 2 locums	To explore reasons behind GPs' intentions to quit direct patient care	17* (by phone)	Age 51-60	23.5%
Dwan et al 2014	2008 - 2009	Australia	GPs working six or fewer clinical sessions per week	To explore the nature and extent of GPs' paid and unpaid work, why some choose to work less than full-time, and whether sessional work reflects a lack of commitment to patient and the profession	26 (at a location determined by GP participant)	Average age: 47 years (females); 58 years (males)	66%

NS = not stated. *these studies were based on largely the same sample of GP interviews. The later study (Sansom et al, 2016) purposively selected more female GPs and more GPs aged 50-55, to increase the variation of age and sex across the sample.

4 Synthesis of findings: questionnaire survey studies

4.1 Prevalence of intention to quit by UK GPs

Of the 22 included survey studies that included some questions on some aspect of leaving direct patient care, nine asked GPs if they intended to quit general practice or direct patient care in the next 5 years (Campbell et al., 2015, Dale et al., 2015, Gibson et al., 2015, Martin et al., 2016, McKinstry et al., 2006, Scott et al., 2006, Sibbald et al., 2003, Simoens, 2002), four asked GPs to state their planned or ideal retirement age (Baker et al., 1995, French, 2005, Luce et al., 2002, Sibbald et al., 2003), and one asked GPs if they were intending to retire before age 60 (Chambers et al., 2004). Table 10 below shows the proportion of GPs aiming to leave general practice or direct patient care within the next 5 years, together with the various wordings of the specific question asked and the year and geographical scope of those surveys that asked this quitting question.

In three earlier surveys, conducted in England and Scotland between 1998 and 2001, between 14% and 22% of GPs said they were likely to leave direct patient care within five years. By 2014 and 2015 the proportion of GPs in the UK saying they would leave general practice in the next five years varied from 29% to 42% in different regions of England, and was 29% and 35.3% in two surveys which randomly sampled from all UK GPs. However, some of the variation in these proportions relates to the slightly different questions used in the different surveys (see Table 10)

Table 10. Proportion of UK GPs intending to quit direct patient care within 5 years

Study Author	Year surveyed	% aiming to quit	Specific quitting question asked	Country (Region)
Sibbald	1998	14.0%	Likelihood of leaving direct	England
Sibbald	2001	22.0%	patient care within 5 years, on a 5-point scale (1 =none, 5 = high); score of 4 or 5 classified as intending to quit	England
Simoens (1)	2001	19.9%	leave general practice within 5 years	England and Scotland
Gibson	2015	35.3%	"considerable likelihood" would quit patient care in next 5 years	UK
Martin (Health Foundation/ Commonwealth Fund)	2015	29.0%	Wish to leave general practice within the next 5 years (NB. plus a further 17% were not sure)	UK
Campbell	2014/15	35.0%	at high risk of quitting direct patient care within 5 years	England (South West)
Dale	2014/15	41.9%	Saying 'No' to Intention to remain in general practice beyond the next 5 years	England (West Midlands)

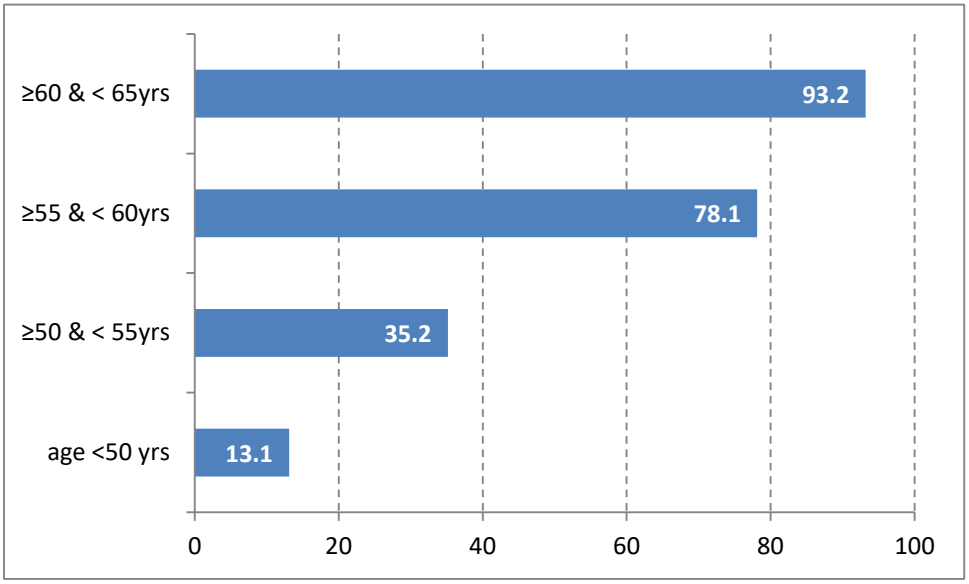
NB. Scott et al and McKinstry et al papers not shown because they did not report the overall percentage aiming to quit (e.g. in Scott et al was assessed as means of Likert scale scores – very unlikely (0) to very likely (5)).

4.2 Intention to quit by UK GPs and selected determinants

4.2.1 Intention to quit and age

Various studies reported the positive association between intention to leave direct patient care or leave general practice and GP age. Most recently, in Gibson et al's survey of 1,172 GPs who were respondents to the Eighth National 2015 GP Worklife Survey in England, there was a steadily increasing intention to leave direct patient care after the age of 50 (Gibson et al., 2015) (see Figure 2). Also, in both the over 50s and under 50s in this survey, a higher proportion of male GPs than female GPs had a higher likelihood of intending to quit direct patient care within 5 years.

Figure 2. Proportion of GPs in England intending to quit direct patient care in the next 5 years, by age-group (2015 GP Worklife Survey)



This association of greater intention to leave practice with older age is also evident in the findings of Martin et al's (2016) analysis of the 2015 Commonwealth Fund survey of GPs, in which GPs over the age of 55 accounted for 84% of all GPs intending to retire before the statutory age of retirement. However, in contrast to those intending to retire, under 55 year-olds accounted for three-quarters of the 8% of GPs who intended to stay in medicine but leave general practice, and four-fifths of those who wanted to leave medicine for a different career.

The less recent surveys of GPs showed a similar relationship of increasing likelihood of retiring with increasing age.

4.3 Findings from multivariable analyses of intention to quit by UK GPs

While most of the included studies examined the bivariate associations of intention to quit or planned retirement age with a few other factors (notably age, gender or contract status), four studies evaluated intention to quit decisions using multivariable analyses involving a larger range of potential explanatory variables (Campbell et al., 2015, Scott et al., 2006, Sibbald et al., 2003, Simoens, 2002). Table 11 below summarises the methodological details and results of these analyses. Note that another included study, by

Hann et al. (Hann et al., 2011), uses essentially the same survey data as the Sibbald et al study, but links it to NHS census data to identify those GPs who are still practising.

The three studies involving larger survey samples from either all of England or from both England and Scotland also included the widest range of potential explanatory variables. Two of the analyses were of the same dataset by largely the same set of authors/researchers (Simoens et al 2002 and Scott et al 2006), but used different statistical modelling approaches. But these studies are each more than 15 years old. In contrast, the most recent multivariable data analysis, of 2014-15 survey data, was of only 507 GPs in the South West of England and included relatively few explanatory variables, and none capturing any aspect of job satisfaction. All of the surveys on which these analyses were based had moderate response rates (44% to 51.5%).

Table 11. Methods variables and findings of multivariable analyses of intention to quit

Lead author	Sibbald	Simoens (2)	Scott	Campbell
Country/region	England	England & Scotland	England & Scotland	South West England
Data year(s)	1998 & 2001	2001	2001	2014-15
No. of GPs (in analysis)	974	1,968	1,968	507
Quitting variable	Likelihood of leaving direct patient care (primary or hospital) within 5 years (as binary variable)[a]	Likelihood that would leave medical work entirely within next 5 years (5-poiint Likert scale)[a]	Likelihood that would leave direct patient care in the next 5 years (5 point Likert scale)	Intending to quit direct patient care within 5 years (as binary variable)
Regression/modelling method	logistic regression	Logistic regression	Structural recursive model	Multi-level modelling
Response rate	47%	45%	44%	51.5%
Results:				
R^2 (% of variation explained)	NR	(Pseudo R^2) 27% – 30%	15%	NR
GP characteristics:				
Age	**5-Year age-bands (n = 7**)	Age (and Age squared)	**5-Year age-bands (n=5)	**10-Year age-bands (n=5)
Gender	Male/Female	Male/Female	Male/Female	Male/Female
Practice size	Practice list size	No. of GPs in practice	List size per GP	Practice list size (2, small/med, large)
Ethnicity	**[b]White/Non-white	*Ethnicity	Ethnicity	White/Non-white
Mode of employment		GP Principal *PMS GP GP non-principal	GP Principal PMS GP GP non-principal	
Partner/spouse	With partner/With working partner/ With partner working in health care		Married Partner working FT/PT	
Children	**No. of children	No. of children	**No. of children	
Practice location	Urban/Rural (5) Affluent/Poor (5)	Practice location (Rural/Urban?)	Rural/ Semi-rural/ Suburban/ town/city Deprived/Mixed-poor/Average/Affluent Country (Eng/Scot)	**urban Practice deprivation
Job satisfaction	**Overall job satisfaction	**Workload **Demands from patients **Change within general practice **Out of hours responsibility Workplace	**Job satisfaction (overall) **Choose method of working 8 other job satisfaction aspects (colleagues, recognition, responsibility,	

Lead author	Sibbald	Simoens (2)	Scott	Campbell
		relations	remuneration, opportunity, work hours, variety)	
Workload/hours	Ave. weekly hours worked Ave. weekly hours on call	Number of hours worked per week (and squared) Hours on call PC workload Clinical governance workload	Number of hours worked per week (and squared) Hours on call PC workload Clinical governance workload	
Income		Household income	Household income	
Other		Months in job PCT/LHCC – Quality of care PCT/LHCC – Cooperation Various interactions between the variables above	Months in job PCT/LHCC – Quality of care PCT/LHCC – Cooperation	Country graduated

[a] These two studies used the same data set yet reported quitting variables with slightly different wording.
[b] Non-white ethnicity status statistically significant coefficient in 2001 data only
** statistically significant coefficient at p<0.05 level
* statistically significant coefficient at p<0.1 level
Abbreviations: NR = Not Reported; PMS = Primary Medical Service (in Scotland); PT = Part-time; FT = Full-time; PCT = Primary Care Trust

The multivariable analyses showed that job satisfaction/stresses and other workload-related factors were a recurring and important determinant of intention to quit, even after adjusting for a wide range of other factors. However, other factors were also important, as significant proportions of GPs who reported overall satisfaction with their job also intended to leave direct patient care (e.g. 30% of satisfied GPs in the Simoens et al (2002) study intended to leave the NHS in the next 5 years).

While age was statistically significantly associated with intention to quit in three of the four multivariable analyses, in the Simoens study the age of GPs was not associated with intention to quit (possibly because age was correlated with the more specific factors relating to contract type, job satisfaction or workload characteristics). Interestingly, after accounting for other factors, gender was not statistically significantly associated with intention to quit in any of the analyses. However, two of the three analyses that included the family characteristic of the number of children under 18 showed that GPs with more children were less likely to intend to quit patient care. While the study by Campbell et al (2015) had a smaller survey sample size and included a smaller range of mainly dichotomous GP and practice characteristics that did not include job satisfaction, they did separately estimate GPs' intentions to quit direct patient care fully from intention to take a career break.

Looking across the four analyses, the evidence was much less consistent for some other factors, such as ethnicity, contract/employment status and income. In the Simoens et al's study (2002; in England and Scotland), white GPs were more likely to quit than those from non-white ethnic backgrounds, while the opposite was found in the Sibbald et al (2003) analysis of GPs in England (Sibbald et al., 2003). Also, although based on largely the same sample, the Simoens et al (2002) study found that GPs with higher

household income were more likely to quit, whereas the Scott et al (2006) analysis (using a different regression method and slightly different mix of explanatory variables) found no such association. GPs who were non-principals (in the Scott et al 2006 analysis) and those who were Primary Medical Service GPs (in the Simoens et al 2002 study) were also more likely to quit patient care (compared with GP principals/partners). This may reflect the preferences of such GPs for more flexible work arrangements and greater control over work-life balance, which was otherwise probably less well captured in any of the job satisfaction variables in these two studies. One of the more intriguing findings of these regression analyses, for those that included interaction variables, was the finding in both models by Simoens et al 2002 that there was a 'U'-shaped relationship between intention to quit and practice size; that is, GPs were more likely to quit from small practices and very large practices, but less so from medium-sized practices (however, the specific size thresholds at which these relationships hold was not reported).

In terms of generalisability to the NHS today, while the Scott et al 2006 study is over 15 years old, the analyses were very comprehensive and by excluding those aged 60 and over would have yielded more relevant insights into the determinants of early retirement. However, despite anecdotal and qualitative evidence that the career motivations of male and female GPs can be quite different - especially in relation to early retirement and taking career breaks - none of these regression analyses were conducted separately on male and female GP survey respondents.

Finally, in a recent study in the West Midlands by Dale et al (2015), 488 GPs reported intending to leave general practice in the next 5 years (whether due to retirement, career breaks or other reasons). The most important influences on this intention were (where responses of 1 = 'not important', 5 = 'very important'): intensity of workload (mean 4.6, SD 0.86); volume of workload (4.5, SD 0.92); time spent on unimportant tasks (4,4, SD 0.97); introduction of a seven-day working week (4.2, SD 1.2); and job satisfaction (4.2, SD 1.1). The authors also performed a principal components analysis which showed that the two main groups of factors that influenced intention to leave were 'overall workload' (which captured all work-related factors), and 'working conditions' (i.e. flexibility and job satisfaction relative to intensity of work). Two further principal components were related to non-workplace related factors; work-life flexibility and personal development.

In summary, in the studies that included regression-based multi-variable analyses (i.e. which simultaneously statistically adjust for variations in the levels of other observed factors) the consistent determinants of GPs wishing to retire earlier were: older age, having low job satisfaction (or job dissatisfaction) and high or intense workload. Where measures of work-life balance or flexibility/choice in relation to job demands were included in the analysis, these were also often statistically significant. There seems to be a complex interplay between these three key broad factors – satisfaction, workload, and work-life balance/flexibility – with the third of these factors possibly mediating the effects of workload on job satisfaction. But these analyses are not able to support or refute such causal inferences.

While gender was not found to be an important determinant after adjusting for age and other factors, this does not preclude that the balance of these other main determinants might be different for men and women (however, separate multivariable analyses of male and female GP data was not conducted in any of the four studies included here). Although one study found that GPs serving urban areas to be more likely to intend to quit (Campbell et al., 2015), this association was not found in the other three studies that included a range of explanatory variables relating to workload and job satisfaction; and social

deprivation of area or practice population was not associated with intention to quit in any of the three multivariable analyses that included it as a potential factor. The finding (in one study) that either small practices or larger than average practices are associated with a greater intention to quit is worth exploring with GP stakeholders to understand why this might be.

4.4 Intention to reduce work hours or to work part-time

Seven studies examined the factors associated with a desire or intention to work part-time, or to work fewer hours or sessions per week (Baker, 2000, Evans et al., 2002, French, 2005, French, 2006, McKinstry et al., 2006, Simoens et al., 2002, Taylor et al., 2008).

There was only one study published within the last ten years which examined intentions to reduce hours (Taylor et al., 2008). Taylor et al (2008), surveyed UK doctors in 2004 who had become medically qualified in 1997, and reported the proportions of male and female GPs working full-time versus part-time (with one in 9 male GPs working part-time, compared with just over half of female GPs). They also reported job satisfaction and leisure satisfaction scores for full-time and part-time GPs (and compared with other groups of doctor). For job satisfaction, the median score for part-time GPs was only 1 point higher (more satisfied) than those in full-time work (on a 21-point scale), but the leisure satisfaction scale both male and female part-time GPs had median scores approximately 2 points higher (i.e. more satisfied) than full-time GPs of the same gender (on a 10-point scale).

Among the older studies, Baker et al (2000) compared the actual and preferred time commitment of GPs in England in 1998, and who had completed vocational training in 1986, 1991 or 1996. Overall, the proportion wanting to work fewer hours (64%) was far greater than the proportion wanting to work more hours (4%). This was also true for all subgroups examined (eg. GP principals vs non-principals, in the different qualifying cohorts, and males vs females), and also in all subgroups except 'Assistants' and 'Retainers' over 50% of GPs wished to work fewer hours than currently. Those interested in working fewer hours were more likely to be principals (vs non-principals; 73.0% vs 43.5%, $p<0.0001$), from the more recent qualifiers (39.6% of 1996 cohort vs 27.9% of 1991 cohort vs 26.8% of 1986 cohort, $p<0.0001$), and were either in the youngest or oldest age groups [57% and 56% of those aged under 35 years and over 54 years respectively, and 68% and 74% of those in the two age-bands in between ($p<0.0001$.

In 2004, McKinstry surveyed **Scottish GP principals**, and found that in all age-groups except the youngest (≤29 years) and oldest (≥60 years) female GPs worked on average 1 less session per week than male GPs ($p<0.001$). However, Scottish female GP principals in this study were also more likely than males to report that they would increase their clinical commitment to general practice in the next 5 years (28.5% vs 19.2%, $p<0.01$). An earlier survey of GPs (French, 2005), which surveyed non-principal GPs in Scotland in 2002, highlighted the potential 'trade-off' between part-time working and later planned retirement; 70% of male GPs and 55% of female GPs reported they would consider working longer (i.e. retiring later) if they could work on a part-time basis. Unusually, compared with later studies in all types of GP, in this group of GPs (non-principals) there were slightly more who wished to increase the number of sessions worked than to reduce them. French et al (French, 2006) also compared the part-time working patterns and preferences of male and female Scottish GP principals. Female GP principals with children under 14 worked fewer daytime hours than male GPs in similar family circumstances (mean(SD) = 37(13) vs 51(14) hours, $p<0.001$). They were also less likely to work out of hours (68% vs 87%, $p=0.001$). In this study, female GPs were also statistically significantly more likely to have modified their working hours due to their spouse's career (35%

vs 17%, 95% CI of difference: 10 to 27, p<0.001). Such differences between male and female GPs were even more marked in dual-doctor households. Finally, high proportions of both male and female GPs planned to reduce the number of sessions they worked (96% and 80% respectively, difference 16%, 95% CI 4% to 29%, p=0.001)

In summary, relatively high proportions of UK GPs of all ages, both sexes and most contract/employment types say they wish to reduce their work hours or weekly number of clinical sessions. Disappointingly, all studies which examined preferences for working fewer hours or part-time generally only examined associations with one factor at a time, and they asked about these preferences in diverse ways, making comparisons between studies difficult. This lack of multivariable analyses is particularly important as intentions to work fewer or more hours will probably be highly associated with current hours worked. One of the studies also showed that while part-time GPs were more satisfied with their leisure time satisfaction they were only slightly more satisfied with their job satisfaction. There was some evidence that female GPs, non-principals (i.e. salaried GPs) and 'assistants' were more likely to want to *increase* their work hours in coming years, but this may merely reflect the current, lower working hours of these sub-groups. Finally, one study highlighted the potential trade-off between part-time working and later retirement – at least in terms of intended retirement plans (i.e. there was no evidence from studies showing an association between increases in part-time working and *actual* delays in retirement). Overall, while no clear picture emerges of what the main determinants of preferences to work part-time are, there are clear indicators that the motivations may be based on the age, gender and contractual status/practice role of GPs.

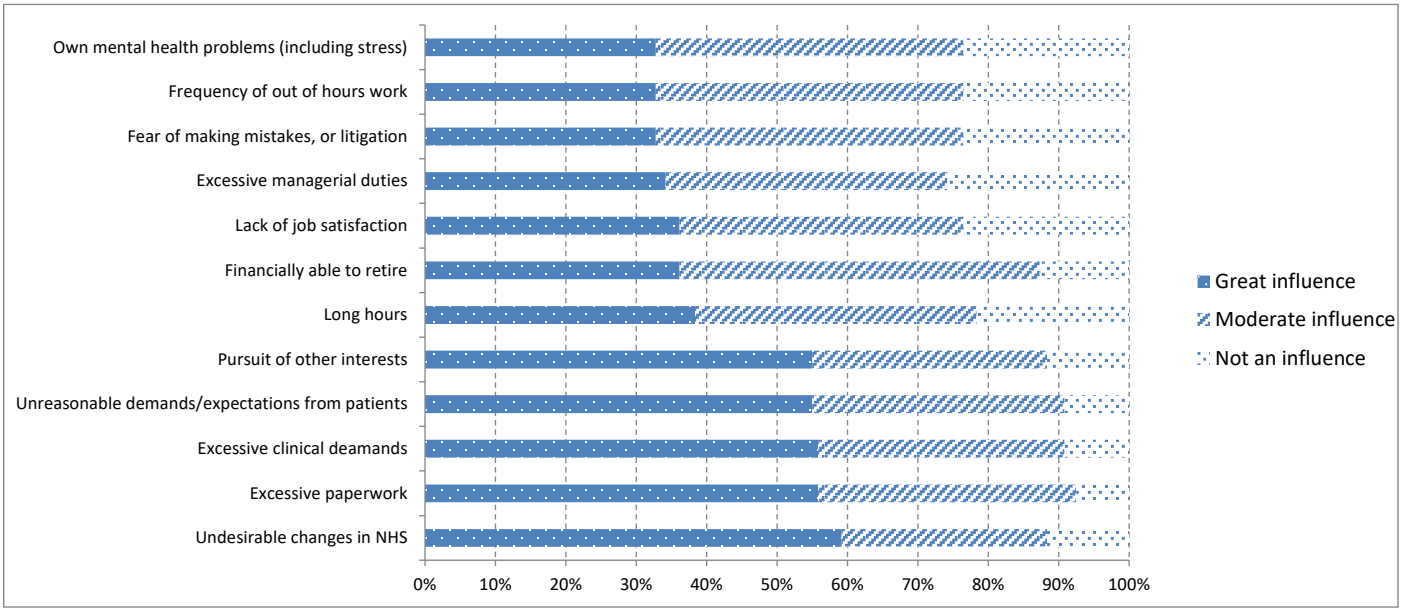
4.1 GP-reported factors or reasons for intending to quit general practice

Four surveys included questions that elicited GPs' reasons for intending to quit direct patient care, by retiring early or reducing work hours (Chambers et al., 2004, French, 2005, Luce et al., 2002, McKinstry et al., 2006). Chambers et al (2004) reported that 81% of those intending to retire early gave excessive workload as the main reason, and 'to pursue other interests' as the second most common (percentage not reported). In the study by McKinstry et al (2006), the 12 GP principals in Scotland who gave reasons for intending to leave general practice cited 'stress of the job' or 'career change' as the main reasons.

In the survey by French et al (2005), many GPs (70% of male GPs and 55% of female GPs) reported that they would consider working beyond their currently intended retirement age, if they could do so on a part-time basis. Other factors that these GPs stated would induce them to delay retirement were financial need (30%), higher job satisfaction (19%), financial incentives (13%) and reduced or no on-call (4%). Similarly, Luce et al (2002) asked GPs (in 2000) to choose the factors which influenced their plans to retire early, and also those factors that might influence them to delay their planned early retirement. The proportions of GPs reporting these different factors are shown Figure 3 and Figure 4 below. The greatest influences, on more than half of GPs planning to retire early, were: undesirable changes in the NHS; excessive paperwork; excessive clinical demands; unreasonable demands/expectations from patients, and; pursuit of other interests. Being financially able to retire was also "a great or moderate influence" for almost 90% of GPs. Correspondingly, the most common reasons GPs say they *might delay their planned retirement* were: reduction in work hours; protection of pension rights (even with reduction in duties and work hours); phased retirement (reduced working hours); and reduced administrative role. Factors that were said to have little influence on early retirement plans were changes in teaching role, increased opportunities for

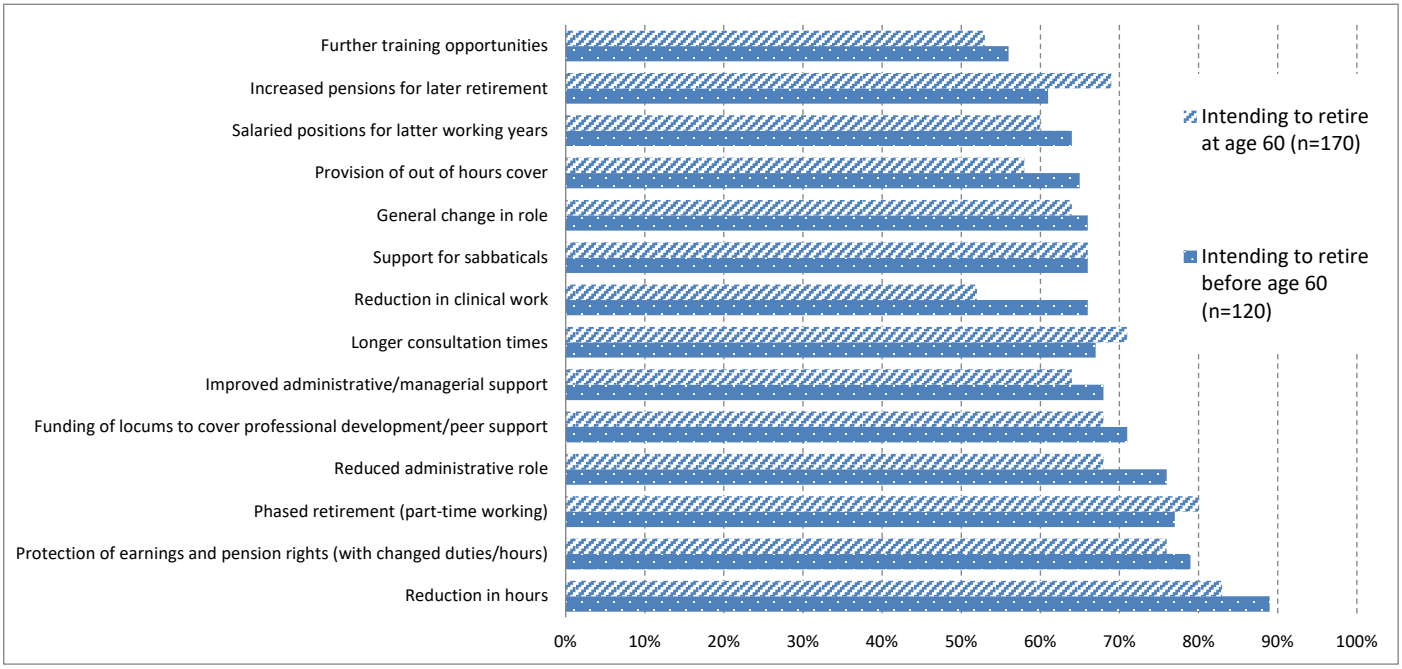
mentoring or being mentored, and “opportunities to work peripatetically” (i.e. in different places and roles) or during school term-time only.

Figure 3. Self-reported influencing factors on planned early retirement of GP principals, Northern England, 2000



Source: Table I p. 306 of Luce et al (2002), survey of 518 GP principals aged over 45 in the Northern deanery (England); those factors identified by over half of those GPs planning to retire before age 60 (n=120).

Figure 4. Factors that GP principals say would most influence them to delay their planned early retirement (aged over 45 years in Northern England, 2000)



Source: Table II p. 307 of Luce et al (2002), survey of 518 GP principals aged over 45 in the Northern deanery (England); those factors identified by over half of GPs planning to retire before or at age 60.

Lastly, Chambers et al conducted a survey of general practice principals on Scotland over the age of 55. Of the 20% (68) who intended to retire before the age of 60, three-quarters cited excessive workload as the reason, with ‘other interests’ as the second most common reason

In summary, the studies which reported GPs' stated reasons for intending to quit patient care or retire early underlined the importance of the main factors already identified (above) as being associated with variations in intention to quit, namely: job satisfaction, workload, work-related stress and work-life balance. However, the studies of self-reported reasons for quitting general practice reveal much more detail within and beyond these reasons – for example, underlying problems of high workload appear to be issues relating to both high clinical work hours, more demanding patients and perceptions of excessive paperwork/administration. Furthermore, job dissatisfaction (and perhaps also work-related stress) is now reported alongside undesirable changes in the NHS, excessive managerial duties and fear of making mistakes. This underlines the dangers of interpreting survey findings in terms of just the most frequently cited reasons (or the statistically significant associations). These studies show clearly that there are numerous specific reasons, and operating at different levels, other than job satisfaction, workload, work-related stress and work-life balance that contribute to decisions to leave general practice. Correspondingly, there are many GPs who have good job satisfaction and low work-related stress etc., but who nevertheless still want to quit direct patient care or to retire early for one or several of the many other reasons reported. These are ultimately individual (or at least family) decisions, and focusing on averages or overemphasising the most frequent reasons may overlook other reasons (like mental health problems, or fear of litigation) that affect a significant minority of GPs.

These studies also showed that intentions to quit general practice are not exclusively about job-related 'push' factors. For example, among the factors cited as having a 'great influence' on the early retirement intentions of more than a third of older GP principals (Luce at al 2002) are: 'pursuit of other interests' and 'financial ability to retire'.

4.2 Factors associated with actual quitting of UK GPs

Only four UK survey studies examined factors associated with actual quitting or retirement decisions by GPs (Hann et al., 2011, Taylor et al., 1999, Young et al., 2001, Doran et al., 2015). Taylor et al (1999) examined the reasons that young (<35 years old), new entrant GPs left their Family Health Services Authority within two years of entering NHS practice, using a multi-level logistic regression model. Overall, 15% of new entrant GPs had left general practice within the period. New GPs were most likely to have left if they worked for smaller practices, were women, or if they served more patients in socially deprived areas.

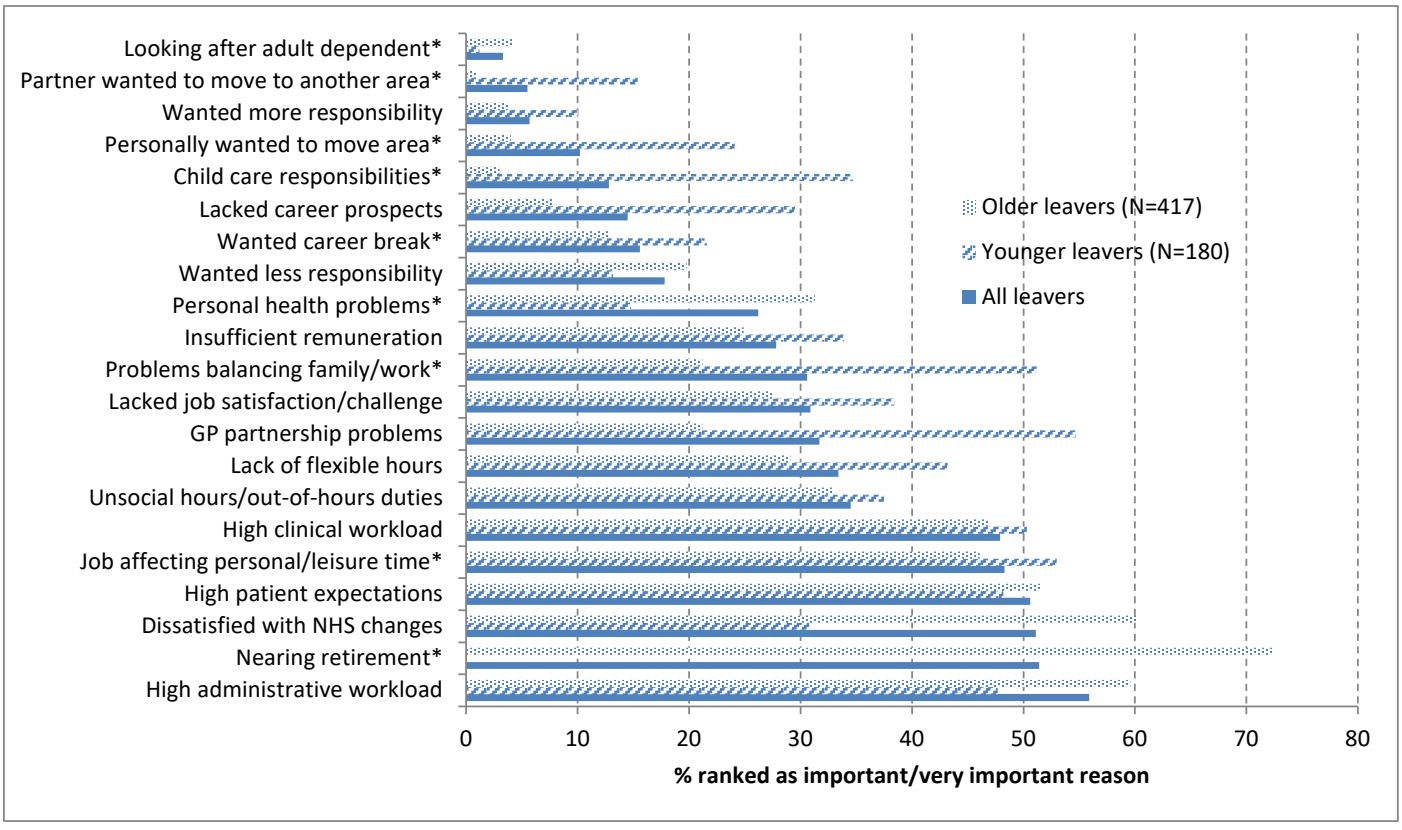
The three other studies examined a wider age-range of GPs. Hann et al (2011) studied the subgroup of 194 GPs (16.5% of their survey sample) who had left direct patient care in England between 2001 and 2006. Young et al (2001) reported data from a national survey of 613 GP principals who had left their GP principal post in England and Wales between 1996 and 1998 (43% of whom were aged over 60 at the time of the survey). And more recently, Doran et al (Doran et al., 2015) surveyed GPs who had left direct patient care in England during a five year period (from 2009/10 to 2014/15), asking detailed questions to elicit their reasons for having left general practice.

In the study by Young et al (2001) in England and Wales, respondents were asked to judge the importance of twelve job-related factors and nine personal factors in prompting them to leave their post. The results are summarised in Figure 5 below. A wide mixture of job-related factors and personal factors (asterisk-marked in the Figure) were stated as having been important or very important in their decision to leave their post, with even the most common factors only being cited by 50% to 60% of GP ex-principals. Across

leavers of all ages, a lack of job satisfaction/challenge was reported as an important reason for between a quarter and a third of GP principal leavers. However, for both younger and older GPs the most common determinants of leaving were: high administrative workload; dissatisfaction with NHS changes; job affecting personal/leisure time; high patient expectations; job affecting personal/leisure time, and; unsocial hours/out-of-hours duties. Determinants of leaving a principal post that affected younger GPs much more than older GPs ($p<0.001$ and >10 percentage point difference) were: GP partnership problems (55% vs 21%); problems balancing family/work (51% vs 21%); lacked job satisfaction/challenge (38% vs 28%); lacked career prospects (30% vs 8%); child care responsibilities (35% vs 3%); or personal desire to move area (24% vs 4%) or because their partner wanted to move to another area (15.4% vs 1%).

Overall, the reasons for leaving given by both men and women GP ex-principals were similar, with some notable exceptions however (data not shown in graph). Younger men were much more likely than younger women to have left a principal post due to dissatisfaction with NHS changes (47% vs 21%, $p<0.01$). Young women were much more likely than younger men to have left their post because of child care responsibilities (48% vs 10%, $p<0.01$) or because their partner (spouse) moved to another area (23% vs 2%, $p<0.01$). Among older leavers, women more often cited GP partnership problems as an important reason for leaving than men (34% vs 17%, $p<0.01$) and women also more often cited looking after an adult dependent as a reason their post (9% vs 3%, $p<0.05$).

Figure 5. Important reasons for leaving GP principal posts in England and Wales between 1996 and 1998



Source: Table 2 (p. 708) in Young et al 2001.
Reasons with asterisks are personal factors; other reasons are job-related. Younger leavers are under 46 years old; older leavers are aged 46 years or older.

Hann and colleagues (Hann et al., 2011) primarily examined the association between job satisfaction and both the intention to leave general practice and actually leaving family practice using national survey data. Using logistic regression analysis, the odds ratio of actually leaving for those who were extremely dissatisfied (compared with those not dissatisfied) was 3.09 (95% CI 1.48 to 6.42). In a sub-group analysis they also showed that extremely dissatisfied GPs left family practice sooner (within a year) and were less likely to return to work than satisfied GPs.

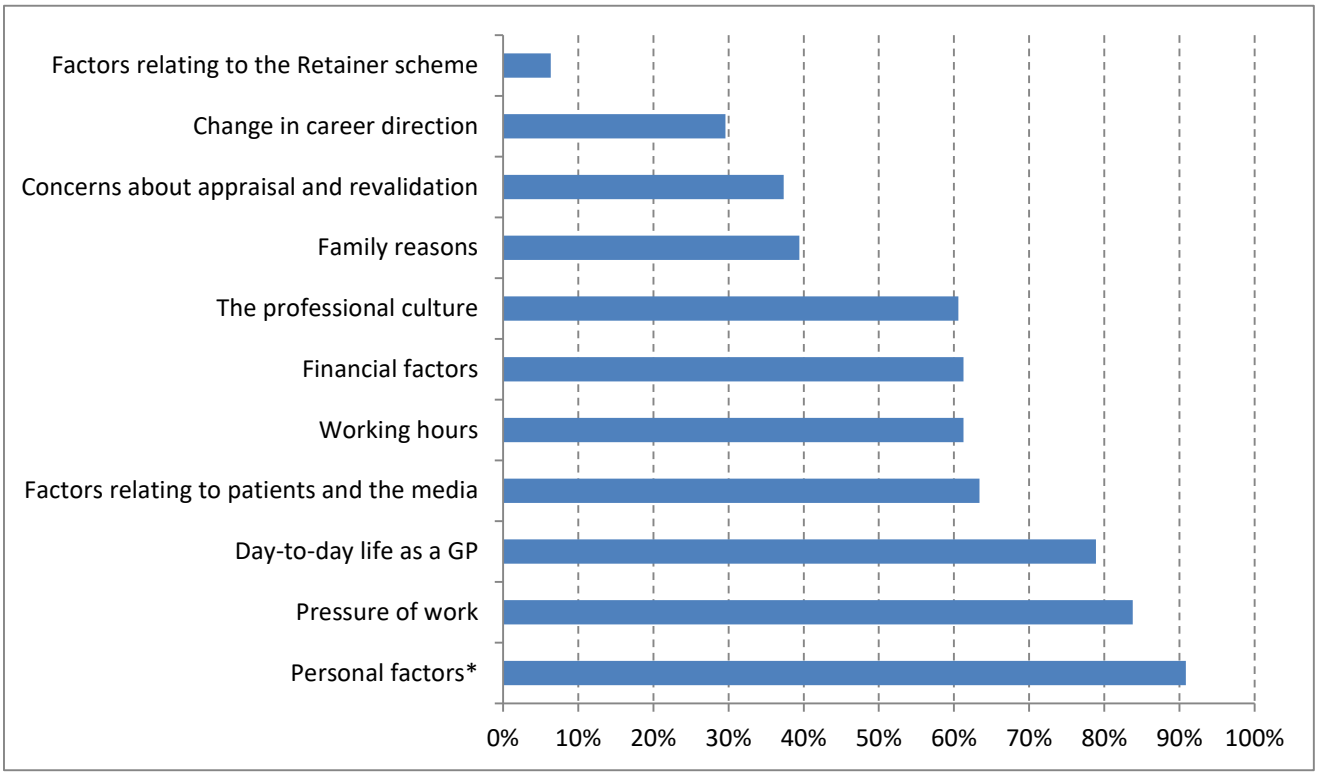
However, higher levels of satisfaction did not appear to prevent leaving, and the association between actual leaving and job satisfaction was not statistically significant if their earlier intention to leave was included in the regression model (suggesting – the authors claim – that "intent to leave mediates most of the effect of job satisfaction on leaving", p.501). Hann et al also point out that the factors associated with job *satisfaction* and job *dissatisfaction* are different – and in fact, that these may be two different constructs. They go on to speculate that "it seems probable that dissatisfied physicians leave because they are dissatisfied with their job, while satisfied physicians leave for reasons unrelated to their jobs" (p.502).

Doran et al (2016) have conducted the most recent, high quality survey of GPs who had left direct patient care in England during a five year period (from 2009/10 to 2014/15). They asked detailed questions based on pilot work to elicit their reasons for leaving general practice, plus some questions about attitudes to 'Retainer' schemes and the GP 'Induction and Refresher' scheme.

The most common main categories of reason given by the 142 GPs who gave reasons for having left direct patient care are shown below (in Figure 6), and also the frequency of the more specigfic reasons given by over a third of the GP leavers (Figure 7). Although 'personal factors' are apparently the most common broad factor, followed by pressure of work, in fact the dominant 'personal factors' were also related to workload and job satisfaction: feeling overworked or burnt out, poor work-life balance, and no longer enjoying being a GP (Figure 7). Similarly, working hours being "too long", or 'incompatible with other things that were important to me' were cited as reasons by almost a half (47%) and over a third of GP leavers (35%) respectively; for some, workload pressures appeared to be compounded by perceived loss of autonomy and professional control (44%), high patient expectations (34%), and the perception that the 'workload required for my yearly NHS appraisal was too high' (29%). Financial factors encompassed a perceived imbalance between remuneration and the amount of work (34%), falling income (34%), but also for a significant minority (21%) who felt that their NHS pension was under threat.

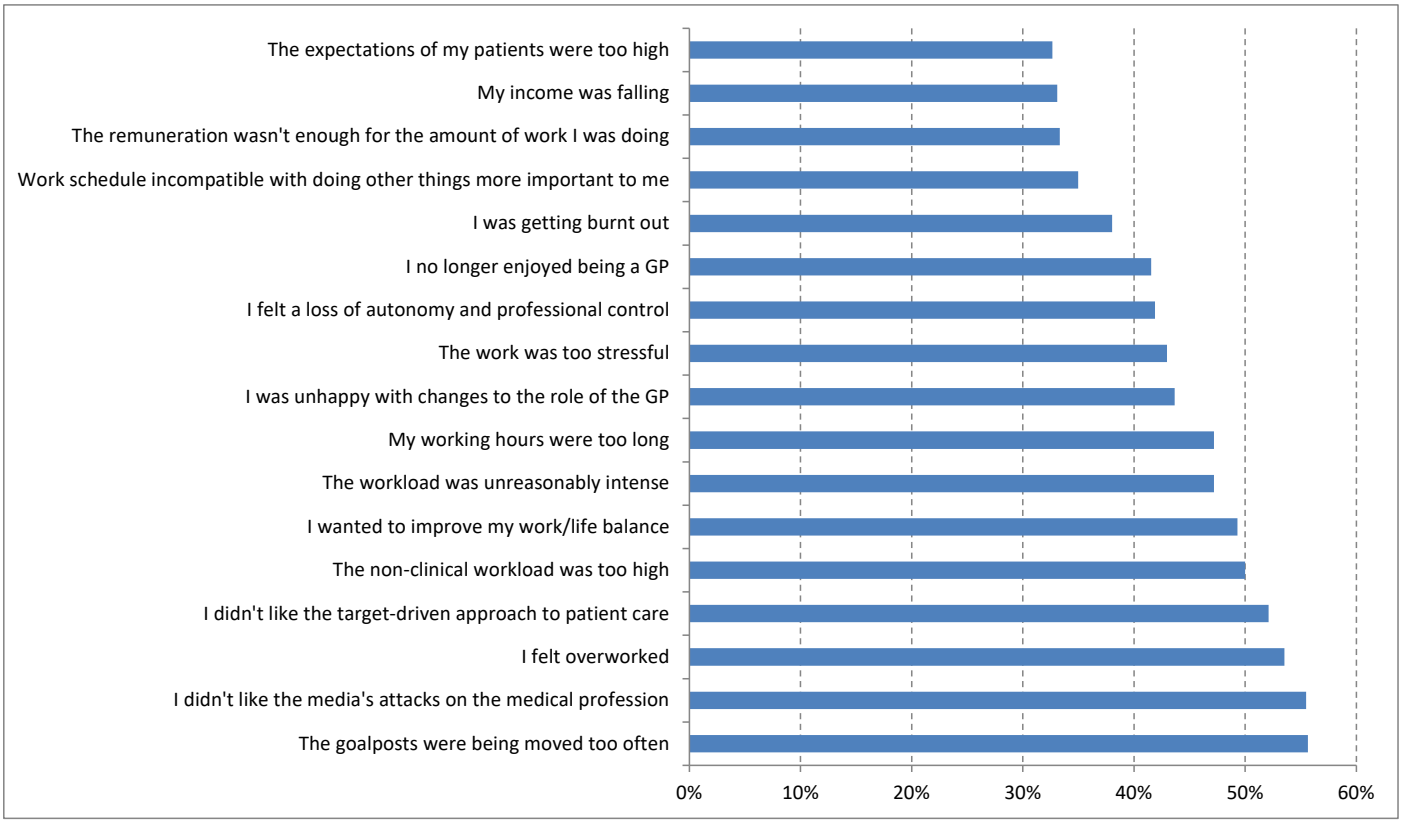
Practice-level factors that were reported to be important included having a non-clinical workload that was too high (50%), feeling isolated and lacking professional support (22%), and having colleagues that they no longer felt able to work with (13%). Policy or national-level influences included not liking the media's attacks on the medical professions (57%), the 'goalposts being moved too often' (56%), not liking the target-driven approach to patient care (52%), and being unhappy with changes to the role of the GP (44%).

Figure 6. Main categories of GP leavers' stated reasons for leaving direct patient care (2014)



Source: Doran at el (2015). *'Personal factors' actually included a number of workload-related factors such as: feeling overworked or burnt out, poor work-life balance, and no longer enjoying being a GP.

Figure 7. GP leavers' most common specific reasons for leaving direct patient care (those cited by over a third of GP leavers) (2014)



Source: Doran at el (2015).

Lastly, a high quality but much older study analysed the retention of 1933 **GPs who entered the NHS between 1991 and 1992** (Taylor et al., 1999). The authors estimated the probability of having left practice in their health authority within two years using a multilevel regression model (almost all of whom, the authors claim, would have left practice altogether). Of various GP, practice and area characteristics, only two were statistically significantly associated with staying in general practice; being male (OR for female GPs = 0.58, 95% CI 0.42 to 0.79, p<0.001) and number of practice partners (OR =1.21, 95% CI 1.11 to 1.32, p<0.001); that is, women were less likely to be retained and those in larger practices were more likely to be retained in general practice within a health authority, after adjusting for age, full/part-time working and area characteristics.

In summary, GPs' stated reasons for having actually left general practice are similar to those implied by the survey studies examining associations between intention to quit and other variables; but they show a larger range and mix of both job-related 'push' factors and some family and leisure-related 'pull' factors.. The overarching and primarily job-related factors previously identified are still very evident (e.g. job satisfaction, workload, work-related stress and work-life balance). However, other more specific and often closely related factors are also more evident (or, perhaps, have come to be more important by 2015 - when the Doran et al survey was conducted and reported), such as: the media's attacks on the medical profession, and 'goalposts being moved too often' (presumably referring to changes in the policies and regulations affecting the profession of general practice and working in the NHS), 'concerns about appraisal and revalidation' and feeling a 'loss of autonomy and professional control'. Other specific factors that emerged amongst more than a third of GP leavers in this more recent study were that 'my income was falling' and my 'remuneration wasn't enough for the amount of work I was doing'. In other studies, and prior to the 2015 Doran et al survey, financial factors were both less likely to be mentioned as important and more often about the financial ability to retire (e.g. size of pension) than income and GP remuneration.

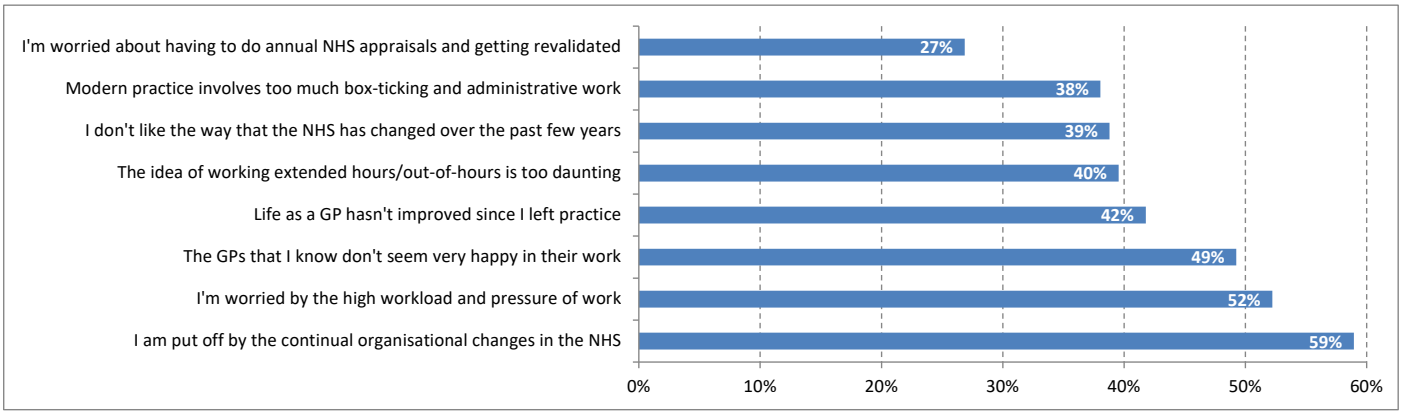
4.3 Career breaks and factors affecting GPs returning to work

Two recent and one much older study examined factors associated with taking a career break (Campbell et al., 2015, Dale et al., 2015, Hutchins, 2005b). Campbell et al (2015) conducted a multilevel modelling analysis to assess the factors that determined GPs' intentions to take a career break in the next 5 years; this group accounted for 22% of the GPs in their survey (Campbell et al., 2015). Only one factor, practice social deprivation, showed a statistically significant association with this intention (after adjusting for a range of other factors including age, gender, ethnic group, practice size, position in practice); GPs working in practices serving less deprived areas were more likely to intend to take a career break. In a recent study conducted in the West Midlands by Dale et al (2015), 267 GPs (23% of the GPs in this survey) stated that they intended to take a career break within the next 5 years. Their most frequently stated reasons for wanting to take a career break were: travel/work abroad (47%); starting a family/young children (17%); study or research (8%); looking after older children (5%); caring for someone (3%), and; other reasons (21%).

In terms of returning to work after a career break, Hutchins et al (2005b) studied the perceived benefits of prolonged study leave amongst 62 GPs returning to practice after their study leave. The main perceived benefits included personal satisfaction and development, increased specialist knowledge, development of research skills, improved practice management, experience in committee/consultancy/advisory roles, and an increased understanding of the NHS.

More recently, Doran et al's (2015) study of GPs who left practice in England between 2009/10 and 2014/15 (NB. not just those taking a career break), showed that the leading self-reported factors deterring GPs from returning to work were very similar to common factors associated with quitting practice, such as: being put off by continual organisational changes in the NHS, being worried by the high workload and pressure of work, but also that working as a general practitioner has not improved over time (Figure 8).

Figure 8. Common barriers to returning to work as a GP (% citing each barrier in England, 2014)



Source: Doran et al (2015). From the 134 GP leavers who gave reasons relating to changes in GP work, loss of skills and concerns about life as a GP.

In summary, unlike the other ways in which GPs may quit practice (e.g. early retirement, or deciding to work on a part-time basis), intentions to quit general practice temporarily – that is for a 'career break' – appear to be more influenced by a specific range of 'pull' factors than by negative 'push' factors to do with the job or related to workload. The main reasons GPs say they will be taking a career break are to work abroad, to have or look after children, or to engage in research or further study. In one study, there also was an association between the intention to take a career break and working in practices in less deprived areas, but this finding is hard to interpret. Although the stated reasons for intending to take a career break seem quite different to those related to intending to permanently quit (e.g. early retirement) or related to the intention to reduce working hours, many of the barriers that GPs say would prevent them from returning to work as a GP relate to negative perceptions about the changing job of being a GP; high workload, low job satisfaction, unsociable hours, excessive administrative work, and recurrent and unwanted changes in the way the NHS and primary care is organised.

5 Synthesis of findings from non-UK survey studies

5.1 Prevalence of intention to quit by non-UK GPs

Of the four included survey studies on non-UK GPs that included some questions about quitting direct patient care, one asked New Zealand GPs if they intended to quit general practice or direct patient care in the next 6 months or the next 5 years (McComb, 2008), one asked Canadian family practitioners if they intended to retire in the next 2 years (Dewa et al., 2014), and two asked Australian GPs about their intended retirement age (Brett et al., 2009, Pit and Hansen, 2014).

Given the different wording of the questions asked, and the different approaches to reporting the data, comparisons between international studies of the levels of intention to quit direct patient care are harder to interpret (see Table 10 below). It is however, possible to say that a significant minority of GPs or family practitioners in all of these countries aim to retire early and, as in the UK, older GPs are more likely or have plans to quit general practice sooner.

Table 12. Proportion of GPs intending to retire early or quit direct patient care within 5 years (non-UK studies)

Study Author (Country)	Year(s) surveyed	Specific quitting question asked	% aiming to quit/retire early
McComb (New Zealand)	2006	Intention to leave within 6 months and intention to leave within next 5 years	12.2% intended to leave within 6 months 28.8% intended to leave within 5 years
Dewa (Canada)	2007	Intention to retire within next 2 years	Of those who were professionally dissatisfied: 24.4% of those aged 55-64 years 8.4% of those aged 45-54 years 5.3% of those aged <45 years, intended to retire in the next 2 years Also, 11% of 'Not dissatisfied' Family Physicians aged 55-64 years intended to retire within next 2 years
Brett (Australia)	2007-2008	Planning to retire before age 65	63% intend to work as GP until at least 65yrs, 6% unsure when they will retire (i.e. 31% intending to retire before age 65)
Pit & Hansen (Australia)	2011	Intended age of retirement	Mean age of intended retirement from direct patient care was 63.5 (SD=6.9); 47% intending to retire before 65.

5.2 Intention to quit by non-UK GPs and selected determinants

5.2.1 Early retirement

Early retirement was the focus of two GP survey studies from Australia, and of three other survey-based studies from New Zealand, Canada and Finland.

The two studies of the retirement intentions of **Australian GPs** did not use multivariable analyses of potential explanatory factors (Brett et al., 2009, Pit and Hansen, 2014). In the earlier survey, by Brett et al (Brett et al., 2009), GPs from Western Australia provided reasons that that they would not work to the age of 65. Approximately 47% reported that their planned earlier retirement would be due to "pressure of work (medical and administrative, exhaustion, burnout)". Other commonly cited reasons (15%-32% of the 63 surveyed GPs planning early retirement) were: poor job satisfaction, disillusionment with medical system; family reasons, leisure time, other interests, improved lifestyle; career change reducing hours; insufficient financial remuneration, financial security, and; maintaining good health, life expectancy, healthy retirement. Fear of deteriorating skills and competence, and medico-legal issues were also cited by three GPs.

Brett et al (2009) also asked GPs planning to retire early what might encourage them to stay working until usual retirement age. The most common stated retention factors cited were: 'better remuneration, better staffing levels, more general support' (46%); 'more flexible working hours, part-time work, reduced workload' (41%), and; 'less bureaucracy, greater professional freedom, more respect' (30%).

A later survey of 92 Australian GPs, from the rural Northern Rivers region of New South Wales, included 65 (70%) who planned to retire early (Pit and Hansen, 2014). The intention to retire early (before age 65) was associated ($p<0.05$) with burnout (MBI-EE score = Maslach Burnout Inventory, Emotional Exhaustion subscale), having lower job satisfaction, lower average work ability, the 'effort-reward imbalance factor' of 'respect and prestige', having work-related sleep problems, and psychological distress (Kessler Psychological Distress Scale, 6-item), younger GP age, fewer years in general practice (mean 16 vs 24), and working more hours on average per week. The highest adjusted odds ratios (statistically significant) for intending to retire early (vs not intending to) were for: medium/high burnout (OR 4.3, 95% CI 1.65-11.21); ever having work-related sleep problems (2.91, CI 1.11-7.6), work ability – mental demands (1.89, CI 1.02-3.55) and work ability - physical demands (1.85, CI 1.03-3.35).

A survey of 566 **New Zealand GPs** by McComb et al (2008), reported that 12% intended to leave within 6 months and 29% within 5 years. While there was no difference between male and female GPs in this intention, those who owned their practices were almost half as likely to intend to leave within 6 months, and about a third less likely to intend to leave within 5 years, than locums and those with other working arrangements (although notably, not controlling for age). New Zealand GPs were more likely to state an intention to leave practice if they were: older (60+ years old); practice owners; had a high income; had low satisfaction, or had low commitment to general practice/being a GP. The authors commented that 'commitment' to general practice appeared to mediate the relationship between satisfaction and intention to leave (which appeared to be based on the subsequent multiple regression analysis; and which is reported below, section 5.3)

In contrast to all the other survey-based studies in this review, Dewa et al (2014) conducted a simulation modelling study of **Canadian physicians**, in order to estimate the cost of burnout in terms of early retirement and clinical reduced hours. The study was included because, as part of the study, the

researchers combined data from three national surveys of physicians to estimate the probability that family physicians of different age and with different levels of burnout would be dissatisfied; these probabilities were then used to estimate the probabilities of retiring or of reducing clinic hours in different age-groups. Within all age groups, being a dissatisfied family physician approximately doubled the proportion of physicians who plan to reduce their clinical hours (but this proportion only varied from 11% to 13% across the three age-groups). In estimating levels of early retirement, among 55-64 year-olds, being dissatisfied was estimated to more than double the proportion of family physicians planning to retire early (from 11% to 24%); but it had a proportionally much larger effect on plans to retire early among the two younger age-bands, with burnout-driven dissatisfied family physicians accounting for nearly all of the 5% and 8% who wanted to retire early (in the <45 years, and 45-54 years age-bands respectively). However, because this modelling study assumed that physician burnout, in particular emotional exhaustion, only affected quitting plans via job dissatisfaction, it provides little insight into the balance of other factors determining retirement plans and reduced hours. Other mechanisms through which burnout may increase early retirement and reduced hours – such as sickness absence and ill health retirement – were not explicitly captured. Also, it is plausible that decreased job dissatisfaction is linked to resilience, which in turn may partly protect against burnout; so, as with many modelling studies, the causal assumptions appear somewhat simplistic and unidirectional and may not reflect the complexity of reality.

Finally, a 2008 survey of nearly 3,000 **Finnish GPs**, 70% of whom were health centre based,asked what job they assumed they would be doing in the year 2020. Compared with GP trainees, practising (and therefore, probably older) GPs were more likely to expect to be retired (35% vs 4%, p<0.001), doing administrative work (11% vs 5%, p = 0.078), and less likely to expect to be health centre physicians (28% vs 57%, p<0.001) by 2020 (*which is where 70% of GPs worked at the time of the survey). Otherwise, this study provided no data on other types of quitting (e.g. part-time working or taking career breaks).

In summary, despite the range of quitting constructs and survey approaches in the included studies in different countries, older age and issues of job (dis)satisfaction and workload seem to be key determinants of intention to quit among primary care practitioners in any country. In addition, one of the New Zealand studies in this review showed that the construct of 'commitment' to general practice may mediate the impact of job dissatisfaction on intentions to quit, possibly fostering a form of resilience to negative job experiences. Similarly, an Australian study showed that as well as burnout and having work-related sleep problems, intention to quit was also associated with 'work ability – mental demands' and 'work ability – physical demands' perhaps suggesting the notion of resilience as a positive factor rather than just as susceptibility to work-related stress. The other Australian study assessed the factors that GPs said might encourage them to retire later than currently planned, and more than a third reported delaying factors such as better remuneration, improved staffing levels, more general support, more flexible working hours, part-time work, and reduced workload.

5.2.2 Intention to reduce work hours or work part-time

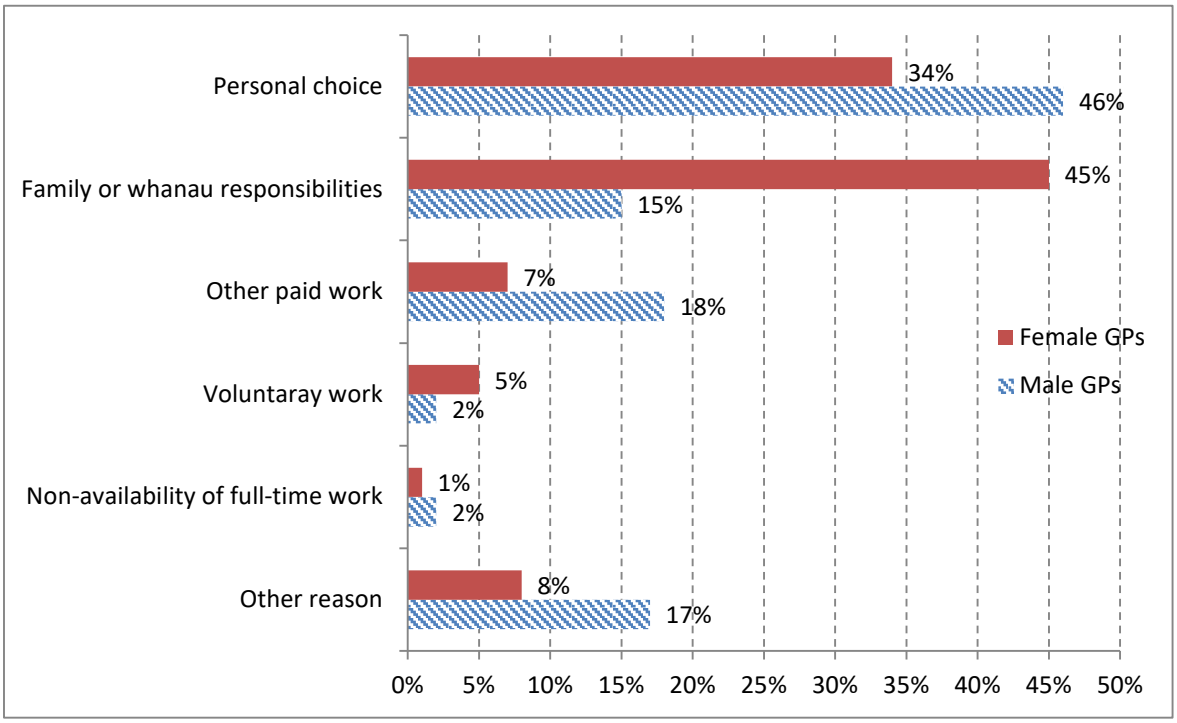
Five studies – of GPs/physicians in Australia (Norman and Hall, 2014, Shrestha and Joyce, 2011), New Zealand (Royal College of General Practitioners of New Zealand, 2015) and Canada (Woodward et al., 2001, Dewa et al., 2014) – assessed factors associated with an intention or preference to work fewer hours. Of the **two studies** of **Australian GPs** that **examined reduced hours working**, the later and larger study by Norman and Hall (Norman and Hall, 2014), focused on the determinants of working reduced hours by using data from two waves of the national longitudinal survey of Australian Doctors (the 2010 and 2011 surveys

of the MABEL study – Medicine in Australia: Balancing Employment and Life). They also examined determinants of the stated desire to work reduced hours. Using logistic regression, with the binary dependant variable of whether GPs had reduced their weekly hours by 5 hours or more (between the two years), they found that only three factors were statistically significantly associated with having reduced working hours – being female (OR 1.91, 95% CI 1.32 to 2.75), age (and age^2/100), and actual weekly working hours. The associations with the two age variables (one positive, the other negative) suggested a 'U'-shaped relationship, with middle-aged GPs (around 50 years old) being the least likely to have reduced their working hours. Perhaps unsurprisingly, those originally working over 60 hours per week were the most likely to have reduced their weekly hours, but also those originally working between 40 and 59.5 hours per week were almost twice as likely to have reduced their weekly hours (by 5 or more) than those aged 20 to 39.5 years old (OR 1.97, 95%CI 1.30 – 3.00). The slightly older study by Shrestha et al (Shrestha and Joyce, 2011) - and which also used data from the national MABEL study - primarily focussed on exploring determinants of work-life balance. It reported that GPs with a poor work-life balance were more likely to intend to reduce their working hours (OR 0.10, 95% CI 0.09 – 0.12, p<0.001), and work-life balance explained 20% of the variability in intention to reduce hours. The association between work-life balance and intention to reduce hours was not explained by lower job satisfaction.

The study of **Canadian family physicians** by Woodward et al (Woodward et al., 2001) used regression analysis to examine factors associated with changes in weekly professional hours between 1993 and 1999. Four factors were statistically significantly associated with changes in professional hours: unsurprisingly, preferring fewer hours in 1993 was associated with having actually reduced hours by 1999; preferring fewer hours in 1999 was negatively associated with a reduction in hours between the two survey dates; physicians reporting a poor balance between their personal and professional lives in 1993 were much more likely to have reduced their professional hours by 1999 (than those with a good balance); and, those who reported that their balance of personal and professional life was just right in 1999 were more likely to have decreased their hours of professional activities over the preceding years. Family physicians who thought the balance between personal and professional life was not good in 1993, but judged the balance as good in 1999, reported working on average 10 hours less that they did in 1993. Similar patterns were seen for men and women.

The 2015 Workforce survey of **New Zealand GPs** (Royal College of General Practitioners of New Zealand, 2015) contained a section of questions on working hours, including questions on reasons for working part-time, intended future working hours and also reduction of hours towards retirement. GPs working less than 36 hours per week selected one or more of five reasons for working part-time: family or 'whãnau responsibilities'; other paid work, voluntary work, non-availability of full-time work, and personal choice (sic.); or to provide a free-text answer. The proportion choosing reasons in each category are shown in Figure 9 below. The most notable difference between male and female part-time GPs is that female GPs were three times more likely to be working part-time due to family responsibilities, and substantially less likely to be working part-time through personal choice or because of other paid work. Of those who reported family responsibilities, for 68% these responsibilities were for school-aged children and 35% were for pre-school aged children, and 12% for ageing parents. Usefully, the researchers also examined the age of GPs working part-time with these different family responsibilities, and showed that significant proportions of GPs in their 40s and 50s worked part-time due to having school age or older children.

Figure 9. Most common stated reasons for male and female New Zealand GPs working part-time (2015)



Source: RCGPNZ 2015

In terms of New Zealand GPs' intended working hours in five years' time, the age-band with the highest proportion of GPs wishing to work more hours was female GPs age 35-39 years (i.e. also the age band with the lowest average weekly work hours). Female respondents with pre-school children worked on average 21 hours per week, while those with school age children worked on average 23 hours per week. The workforce survey also reported an analysis of intended timing of retirement (1-2 years from now, 3-5 years from now etc.) by rural and urban location; but without adjusting for the age of respondents such data seems of limited value. A substantial proportion of GPs said they had either already reduced their hours as they neared retirement (12%) or intended to do so within the next 10 years (47%).

5.3 Findings from multivariable analyses of intention to quit (non-UK studies)

While most of the included studies examined the bivariate associations of intention to quit or planned retirement age with a few other factors (notable age and gender), only one study, from New Zealand, evaluated intention to quit decisions using multivariable analyses involving a larger range of potential explanatory variables, and another (Australian) study assessed intention to work fewer hours using multivariable analysis (McComb, 2008, Norman and Hall, 2014). Table 13 below summarises the methodological details and results of these analyses (showing all explanatory variables, but with those shown to have a statistically significant association with intention to quit marked with an asterisk).

The multivariable analysis by McComb et al of intention to quit general practice by New Zealand GPs, only included three variables – age, satisfaction and commitment (to general practice) – but these explained 26% of the variance in intention to quit within 5 years (and 35% of intention to quit within 6 months). However, this analysis showed that the effect of satisfaction was almost completely mediated by commitment; that is, it was not low satisfaction that directly influenced intention to leave, but low satisfaction leading to low commitment to being a GP then leading to intention to leave.

The analysis by Norman & Hall (2014), was also a multivariable analysis of the MABEL study data in Australia, but of intention of GPs to reduce their working hours and so has been described in the previous section (alongside the other study based on this dataset). However, for consistency, its methods and findings are also included in Table 13 below.

Table 13. Methods and findings of multivariable analyses of quitting general practice (non-UK studies)

Lead author	Norman & Hall	McComb	McComb (stepwise regression)	McComb (stepwise regression including 'commitment')
Country/region	Australia	New Zealand	New Zealand	New Zealand
Data year(s)	2010 & 11	2006	2006	2006
No. of GPs (in analysis)	3377 & 2720	566	566	566
Quitting variable	Intention/desire to work fewer hours (& success in achieving this)			
Regression/modelling method	Logistic regression	'multivariate regression analysis'	'multivariate regression analysis'	'multivariate regression analysis'
Response rate	NR	59%	59%	59%
R^2 (% of variation explained)		See below	25% (of intention to leave within 5 years)	36% (of intention to leave within 5 years)
GP characteristics:				
Age	Age** and Age squared**	Quitting within 6 months $r^2 = 0.022$, $p<0.01$ for age Quitting within 5 years $r^2 = 0.044$, $p<0.01$ for age	6% of variance explained	5% of variance explained
Gender	Female**			
Practice size				
Ethnicity				
Mode of employment	Position in practice**			
Partner/spouse	Single or with partner			
Children	Children or no children			
Practice location				
Job satisfaction	Work satisfaction**		19% of variance explained	4% of variance explained
Workload/hours	On call Weekly working hours**			
Income	Personal income**	Quitting within 5 years $r^2 = 0.011$, $p<0.05$ for income		
Other	Self-assessed health* Metropolitan/Regional/remote			Commitment: 27% of variance explained

[a] Non-white ethnicity status statistically significant coefficient in 2001 data only

** statistically significant Odds Ratio at p<0.01 level

* statistically significant coefficient at p<0.05 level

5.1 Actual quitting by non-UK primary care doctors

Only three survey studies (two of Irish GPs, and a more recent study of Dutch GPs) examined factors associated with actual quitting or retirement decisions by non-UK GPs (Nugent et al., 2003, O'Kelly et al., Van Greuningen et al., 2012).

Van Greuningen (2012) analysed data from two surveys of **Dutch GPs** (2012) who had retired before the age of 65 during two periods, 1998-2002 (n=282) and 2003-2007 (n=191). The researchers asked GPs whether their early retirement decision had been motivated by the perceived burden of four 'External factors' (External control, Demands from government and health insurers, Societal developments, Demands from patients), and three 'Personal reasons' (career change, health, family reasons and time for leisure). For GPs in the Netherlands, between these two periods, both the perceived burden of three of the 'external factors' and the influence of personal reasons on their retirement decision reduced ($p<0.05$, *t*-test); only the perceived burden of external control (e.g. 'an increasing amount of regulations') did not reduce. For the most recent survey, of those retiring 2003-2007, the most influential personal reasons on the decision to retire were 'family reasons' and 'time for leisure', and the least important was to make a career change (based on mean scale scores for each factor). Of the external factors, the highest perceived burden was from external controls and the lowest perceived burden was from 'societal developments' and from 'demands from government and health insurers' (based on mean scale scores for each factor). However, without knowing the proportions of ex-GPs who said that a particular factor 'was definitely part of the decision' (to retire) or 'was not part of the decision', these mean scale scores are not easy to interpret.

Compared with time trends in the UK, this study also showed that Dutch GPs in the later period were retiring later, and that fewer were retiring. The study authors speculate that this may have been due to (i) reductions in objective workload (whereas subjective workload remained at about the same level), (ii) increasing job satisfaction and (iii) lower emotional exhaustion. There had been several workload-reduction measures introduced, including "the nationwide introduction of central GP services for evening, night and weekend service and the introduction of general practice nurses in GP practices" (Van Greuningen et al., 2012).

T**wo surveys** of younger **Irish GPs** who had left general practice within less than a decade of graduating, by O'Kelly et al (2008) and Nugent et al (2003). In the older, postal survey (response rate 84%) by Nugent et al (2003), of Irish general practice training scheme graduates between 1990 and 1996, 36 had permanently left practice by 1999 (17% of respondents). There was no difference in the proportion of male and female GPs who had left (14% vs 19%, p=0.3), and the most common reasons for having left general practice were: career interest (78%); out-of-hours commitment (53%); frustrated/disillusioned with general practice (44%); availability of local posts (36%); having children (19%); other family demands (16%); and (sic.) gender (13%). Only 3 (8%) stated that income was a contributing factor to their decision to leave.

More recently, the national Census of Irish General Practice Training Programme Graduates (graduating from 1997-2003), conducted in April and May 2007, identified 22 graduates who were no longer working in general practice (O'Kelly et al., 2008). Four of these had left because they felt they were not suited to general practice; the other 18 cited a number of other reasons (none cited substantially more than others: having a young family, being disabled, maternity leave/child care, partner going abroad, another specialty, religious vocation, better hours/working conditions (elsewhere), financial, loss of confidence (following career break)). When asked to indicate, from a list, what factors would have probably kept them in general

practice, the majority (12) said nothing would have stopped them from leaving. Others mentioned paid maternity leave, job sharing, “co-op availability” and part-time working.

In summary, in these two Irish studies and a study from the Netherlands with quite different survey approaches, the reported reasons that GPs had left practice indicated a quite different work context to most of the other surveys in this systematic review. Of the reasons cited in two studies of younger GP-leavers in Ireland, out-of-hours commitment and disillusionment with general practice were the only two negative job-related factors stated in one study and most of the other reasons were to do with having other career interests, having children or family demands, partner going abroad or simply because they felt they were not suited to general practice. This contrasts somewhat with the reasons given in the UK and elsewhere, where reasons related to work-life balance and job dissatisfaction dominate. This suggests that the general working conditions and situation of general practice in these two countries (at least, in the late 1990s, and until 2007 when these surveys were conducted) was perceived to be better than in the UK and many other countries. In the case of the Netherlands workload, job satisfaction and emotional exhaustion was also assessed to be improving over time – in part, the authors claim, due to the government introducing several workload reduction measures such as centralised services for out-of-hours work and the introduction of general practice nurses (NB. both of which have been a feature of general practice in many other countries for more than a decade).

6 Synthesis of qualitative studies and evidence:

The qualitative evidence synthesis presented below is based on the 4 UK interview-based studies that were identified (and reported in 5 papers/reports; (Campbell et al., 2015, Doran et al., 2016, Hutchins, 2005a, Newton, 2004, Sansom et al., 2016)). This partly reflects the chronology of our analyses, in that the data from the UK studies were synthesised first, but it also reflects that there was only one qualitative interview study from outside the UK, of GPs in Australia (Dwan et al., 2014); so it made less sense to synthesise the evidence from this Australian study with the UK studies' data. And it would also have been more challenging to do this as this study focussed explicitly on why some Australian GPs preferred to "work sessionally" (i.e. part-time), and whether this reflected a lack of commitment to patients and their profession, which is a quite different and narrower focus than the UK qualitative studies. The findings of the Australian study are therefore summarised after the main qualitative synthesis as a separate case study.

6.1.1 Quality of the qualitative GP interview studies

Overall the quality of the included qualitative research studies and papers, as assessed using the 14 questions of the adapted 'Wallace tool' (Wallace et al., 2004, - and Appendix D), varied from reasonable quality (Hutchins 2005a and Newton 2004) to good quality (Campbell et al., 2015, Sansom et al., 2016, Doran et al., 2016) and Dwan et al., 2014) . However, most studies failed to make explicit the theoretical or ideological perspective of the author (Q2), and in none of them were the authors evidently reflexive in their approach (Q13). The two recent studies by Campbell/Sansom et al and by Doran et al had the highest assessed quality (Campbell et al., 2015, Doran et al., 2016, Sansom et al., 2016), while those by Newton (2004), Hutchins et al (2005a) and the Australian study by Dwan et al (Dwan et al., 2014) had further limitations in relation to 2 or 3 other quality criteria (e.g. describing the study context adequately, describing data collection methods, and considering limitations and the justification of any claims of generalisability). All of the themes in the synthesis were informed by at least two studies, and there was at least one good quality study informing every theme, and so the quality of individual studies is not detailed in the main synthesis.

6.2 Themes and sub-themes related to why GPs leave direct patient care

The synthesis is presented as a series of linked themes, each of which belongs to one of five categories that affect whether GPs leave direct patient care or reduce their time commitment to patient care. The five main categories of explanatory theme were: *Undoable/unmanageable* (including workload and related pressures); *Morale*; *Impact of organisational changes*; *Projected future*, and; *Multiple options and strategies*. This analytical framework is summarised in Table 14 below. All quotations cited in the following synthesis are primary quotations from GPs.

Table 14: Analytic framework showing identified categories and themes

Undoable /unmanageable	**Morale**	**Impact of Organisational Changes**

- Workload
- Pressures
  - Fear of making mistakes
  - Training and resources
  - Patient demands
  - Practice demands
	- Identity / perceived value
	- Professional culture
	- Lack of support
	  -Government/political
	  - Wider community
	  - Negative 'media-bashing'
	- Job satisfaction
	- Wellbeing
	- Work-life balance
		- Referrals
		- Targets and assessments
		- Doctor-patient relationship
		- Changing role
		- Autonomy and control
		- Re-accreditation

Projected Future	**Multiple Options and Strategies**	
- Viability (of early retirement) - Ageing - Investment and commitment	- Flexible working - Continue and cope - Alternative roles	

6.3 Undoable / Unmanageable

6.3.1 Workload

All five UK semi-structured interview studies contributed to the theme "workload (administration)".

GPs describe struggling with non-patient related administration. One GP describes receiving too many non-specific and irrelevant emails (primarily from CCG colleagues and the health authority) (Campbell et al, 2015). An unprecedented increase in administrative workload associated with secondary care, preparing for Care Quality Commission (CQC) visits, management targets, regulations and guidelines left many feeling professionally compromised, reducing the time available to spend with their patients and leading to a change in the doctor-patient relationship. Two GPs in one study reported feeling that the demand for patient care was outstripping supply and felt that contributing factors included unrealistic patient expectations; an increase in the number of patient contacts without a corresponding increase in the number of GPs; and additional workload from secondary care (Sansom et al, 2016). GPs report feeling that having too high a non-clinical workload caused stress and reduced job satisfaction and was a factor in their decision to leave practice early. Many GPs who had continued in practice beyond the age of sixty had done so because they had been able to delegate paperwork, and alleviation of administration emerged as a high priority for GPs (Hutchins 2005a).

6.3.2 Patient demands

GPs report how patient demand (increased number and increased expectations) coupled with a shortage of GPs and available appointments is adding to a feeling of increased pressure, which is making some GPs consider retiring earlier. Patient demands may be higher if GP practices are situated in areas of higher deprivation with populations where many have multiple health and social problems. Patient demands may be higher when working with growing elderly populations with multiple morbidities and social care needs (Campbell et al., 2015) or in areas with high numbers of asylum seekers (Hutchins 2005a). Others noted that GPs were receiving more referrals and were required to do more follow-ups, attributed by some GPs to unrealistic expectations of patients (created in part, they believed, by media and services such as NHS 111 and hospital doctors lacking resources).

GPs felt that the demand for patient care was outstripping supply. Contributing factors reported by GPs included: unrealistic patient expectations; an increase in the number of patient contacts without a corresponding increase in the number of GPs; and additional workload passed on from secondary care. Other demands in addition to contact with patients were felt to compound the problem, including: the need to meet targets, to stay up-to-date with new guidelines, and to prepare for Care Quality Commission (CQC) visits. It was not uncommon for GPs to report working 12 hour days (or longer), for there to be no break during the day, and for them to work on their unpaid days as well. The pace of work was felt to be difficult to maintain and there was a general feeling that the work had also become more complex in recent years. One GP suggested that the demand and supply model of the 20th century no longer works in the 21st century: "demand is outstripping supply but also outstripping the financial framework that is supplied" (Campbell et al., 2015).

GPs report how lack of time with patients corresponded to decreased job satisfaction. "I think what's not so enjoyable now is that actually you are not able to meet people's demands" (Hutchins 2005a).

6.3.3 Practice demands (GP shortages and others working reduced hours)

The provision of part-time work within their practices was reported to be an important way to enable retention beyond retirement, by reducing the pressure of work, and to enable GPs to pursue interests they enjoyed (Hutchins 2005a). GPs in smaller practices were reported to be more likely to feel trapped between continuing to work full-time under extreme pressure in order to support colleagues, or to retire completely. However, difficulty in recruiting locums precluded many from working part-time. Two GPs described thinking that in an unsupportive practice environment, having to take on the responsibility for a practice partner's absence, ill health, or early retirement can add to feelings of burden and stress. In contrast, in more supportive practices, it was felt that such scenarios are better managed by the team (Campbell et al, 2015).

6.3.4 Pressure

All five UK semi-structured interview studies contributed to the theme of "pressure".

Fear of making mistakes

Time pressure and conflicting priorities meant that some interviewed GPs felt that the care they were giving was sub-standard. These pressures, intensified by a perceived 'blame culture', led to disillusionment and a raised anxiety about the risk of making a mistake:

> *'I found that I was increasingly anxious about the patients that I was seeing. I think because I was so often quite time-strapped with all the things that I was trying to fit in during the day. But*

I felt conscious that I was worried that I ran the risk of missing things and that made me really worried and anxious.' (Doran 2016)

6.3.5 Training and resources

GPs report feeling placed in a stressful situation of trying to meet raised patient expectations with insufficient resources and with increased workload being compounded by inadequate training and information technology resources.

GPs describe how the impact of inadequate resources may be particularly felt by older GPs experiencing reductions in stamina and physical limitations. As previously noted, deteriorating eyesight was noted by three GPs in one study (Campbell et al., 2015), however, computer systems seemed unable to accommodate accessibility issues such as the need for a larger font or fewer icons on the screen.

"The big plan is to merge with a neighbouring practice and I think, if I was ten years younger, I'd be thinking 'that's great'. But now I'm thinking 'have I really got the energy to do that?' I don't know. And if that happens in the next six months, it may push me to go". (Sansom et al., 2016)

6.4 Morale

6.4.1 Identity / Perceived value of GP work

Four UK semi-structured interview studies (Campbell et al., 2015; Doran et al., 2016; Hutchins 2005a; Sansom et al, 2016) contributed to the theme "identity / perceived value"

GPs describe feeling unvalued by patients and politicians (Campbell et al., 2015), with one GP suggesting that public perception of the NHS also contributes to low morale (Sansom et al., 2016). One GP described how increased patient demand coupled with GP shortages have resulted in the perception of the NHS as a "failing brand" in the eyes of the public. GPs need to compensate by working harder and harder, with some deciding to retire rather than "flag up a failing NHS" (Campbell et al., 2015).

Some GPs also describe being portrayed by the media as "overpaid and under-delivering", with the more positive aspects of their hard work and professionalism remaining largely unreported. GPs expressed a wish to be more greatly valued, feeling that their role had been diminished to that of serving a management structure which should support them.

Once their job satisfaction had become negatively impacted, GPs describe how the combined pressures of increased patient demand and the negative media portrayal left many feeling unsupported and vulnerable to burnout and ill health, and, ultimately, leading some to the decision to leave general practice.

6.4.2 Professional Culture

Four UK semi-structured interview studies (Campbell et al., 2015; Doran et al., 2016; Hutchins et al., 2005; Sansom et 2016) contributed to the theme "professional culture"

Acceptability of early retirement

GPs report a cultural norm of early retirement within their profession. They report feeling that it is common and acceptable amongst their peers to consider and financially plan to take early retirement and, with this in mind, many GPs have made long-term financial plans to make this happen. There is a feeling that if peers of the same age (or younger) are retiring, then why shouldn't they?

Cultural shift

Organisational changes, particularly increases in bureaucracy, have resulted in other cultural shifts. GPs reported that the Introduction of the Quality and Outcomes Framework (QOF) marked a defining point where "modern medicine" became a "more target driven culture" or a "tick box exercise" (Doran 2016). Authors of one study (Newton 2004) said that most of the GPs they interviewed in their study were trained for and have practiced in a different work paradigm to the one which sees the GP as one member of a multidisciplinary team commissioned to deliver national standards of care (Newton 2004).They suggest that GPs more used to the traditional mode of general practice, based on a GP becoming a principal and staying in one practice for most of his or her career, may struggle with adapting to the performance-monitored 'new career model'.

Furthermore, the introduction of payment-related government targets was reported to have impacted on the "moral values" fundamental to general practice of some GPs: "The government has bred a conniving species of GP ... To an extent you do care about your patients, and you do do your best for them because it's your job ... but you've no longer got any incentive to do anything more than that." (Hutchins 2005a).

Bullying top-down culture

GPs also describe a permeating "bullying culture" from the top down:

> *'There is a really aggressive, vicious, bullying culture that permeates management in the NHS. That then flows all the way down to whoever your locality middle-managers are. It's a dreadful, awful, bullying culture and to shift from that to a non-overseeing, facilitative, hands-off, trusting culture is ... I don't know if people are capable of that cultural shift.' (Doran et al., 2016)*

Lone working

Descriptions of a "lone working culture" are described. Although all participants felt supported during their training and registrar years, once fully qualified some GPs became increasingly isolated in practice:

> *'I did sometimes feel quite isolated at the practice […] I think the thing that possibly my training hadn't prepared me for was sort of feeling like a lone worker in many ways, particularly in comparison to working in a hospital where you were always part of a team.'*

Where practice level support isn't evident, or the GP doesn't feel supported, it can make for an 'everyone for themselves' culture where the decisions about when to leave are based more on self-survival than what is best for the practice.

6.4.3 Lack of support

Four UK semi-structured interview studies (Campbell et al., 2015; Doran et al., 2016; Newton 2004; Sansom et al., 2016) contributed to the theme "lack of support".

Government / political

Funding cuts mean that more is expected of GPs with lower financial resources and less support in place. Some GPs described being "at the front end of a service unable to deliver what it promises" (Newton 2004). One GP said he speaks for others when he voices fears that politicians, through the setting up of CCGs, are scapegoating GPs so that they will to take the blame for the "impending failure of the NHS", and not the politicians.

> *"The threats from politicians to change our working hours [are] so stressful and demoralising … we can't see how we can make that work without our work-life balance being fairly*

comprehensively stuffed … that is an instant turn-off and an instant major demoraliser for GPs who are already overworked and struggling" (Sansom et al., 2016)

GPs describe a series of conditions which they felt contributed to an increasingly pressurised working environment. These included organisational changes resulting in a clash of values and diminishing professional autonomy, as health care became more centralised, standardised, and depersonalised; an unprecedented increase in administrative workload; and a lack of support not only from government, but also across services and the wider community due to ongoing negative portrayal in the news media.

Negative media portrayal

Some GPs felt misrepresented by the media and felt frustrated that the more positive aspects of their hard work and professionalism went largely unreported. Being the subject of an ongoing and negative media campaign left many feeling undermined and demoralised:

'We were targeted in a completely unsympathetic light […] without any recognition of what as a profession we gave to the public really and it did, over time, become very wearing.' (Doran et al., 2016)

6.4.4 Job Satisfaction

All five UK semi-structured interview studies contributed to the theme of "job satisfaction".

GPs reported that low job satisfaction was linked to feeling undervalued and underappreciated (Doran et al., 2016). Doran et al report that, overall, GPs in their study felt that their job was not meeting their expectations and there was a loss of intellectual challenge. They report that this seemed to be particularly among GPs who had been in practice for 10 years or more and it was felt that their current job was unrecognisable from the professional role they had initially taken on (Doran et al, 2016). Many GPs nearing retirement age felt that the level of satisfaction they were able to derive from general practice had declined considerably as a result of increased government regulation and bureaucratic pressure, diminishing their professional autonomy and job satisfaction.

Low job satisfaction was attributed to combinations of factors: organisational changes (resulting in a clash of values and reduced professional autonomy), increased administration workload, lack of support (from government, services and the wider community); all appeared to lead to reduced job satisfaction (i.e. lack of enjoyment of the work) and ultimately affected wellbeing. In some cases, GPs describe how they grew to hate their job. In other cases, GPs reported that they loved their job but hated "everything around their job". One former GP described:

'Passionately adoring my work and my patients, I mean, really I can't tell you how much I miss them. Absolutely loved the actual job, but everything around the job I hated.' (Doran et al, 2016)

Many GPs nearing retirement age felt that the level of satisfaction they were able to derive from general practice had declined considerably as a result of increased government regulation, paperwork and bureaucratic pressure. GPs described increased restrictions on prescribing and referrals making their work less enjoyable, as they have less freedom and time to see patients and felt compromised in their ability to practice patient-centred continuous care, resulting in a diminished sense of professional values and autonomy and ultimately diminished job satisfaction.

Job satisfaction was stated to be a major factor in determining the retirement plans of GPs. Many said that the volume of paperwork had detracted from their enjoyment, with some saying that if this could be alleviated they would be happy to continue with patient consultations.

> *"To have someone who could really look after the administrative and financial side definitely would keep more people in general practice." (Hutchins 2005a)*

6.4.5 Wellbeing

All five UK semi-structured interview studies contributed to the theme of "wellbeing".

Time pressure was cited as a factor for GPs not addressing their own health needs:

> *"looking after their own well-being was 'just one more thing to fit in', and GPs were reluctant to visit their own doctor due to not wanting to be a 'nuisance patient' and an awareness that 'they're going through the same suffering as you are" (Sansom et al.,2016)*

GPs reported experiencing physical ill health as well as burnout, manifesting as stress and exhaustion as a result of working under relentless pressure "I just feel, you know, you can't go on doing the same thing at the level we're doing it indefinitely." (Hutchins 2005a). One GP described the vicious circle of doctors getting sick, this placing increased pressure on the remaining doctors, who then themselves get sick. He felt that sickness absence amongst GPs had increased during his GP career and that the intensity of the workload was a clear cause. Some GPs retired earlier than they had originally intended to, on account of continuing ill health (Campbell et al., 2015)). Two GPs referred to experiencing "burnout" as a result of the job (Hutchins 2005a). Another referred to "the attrition of your own resilience to keep going". Feelings of being overwhelmed, stressed, and losing confidence were also mentioned.

GP burnout also has implications for the quality of patient care, as described by a GP appraiser:

> *'There was this kind of malaise growing within the profession that I could see as an appraiser. As GPs got more and more exhausted and burnt out, there was this "I don't want to know", there was this disassociation, there was this lack of will to fight to get what patients needed.' (Doran et al., 2016)*

Such impacts on the quality of care and the experience of providing care may in turn reinforce patient dissatisfaction and further lower job satisfaction.

6.4.6 Work-life balance

All five interview studies with UK GPs contributed to the theme of "work-life balance".

Issues relating to quality of working life, rather than increased remuneration, emerged as one of the most important factors influencing retention. GPs of both genders wished to adjust their working hours and planned retirement to spend more time with partners and family in the UK. Many stated that the provision of part-time work within their practices was important to enable retention beyond retirement to reduce the pressure of work for that individual, and to enable them to pursue interests they enjoyed. GPs with high job satisfaction said that although they like their job, they felt it encroached on their lives outside work and that they wanted to enjoy hobbies and other interests whilst they were young enough to do so.

6.5 Impact of Organisational Changes

6.5.1 Referral volume and complexity

Four UK semi-structured interview studies (Campbell et al., 2015; Doran t al., 2016; Hutchins 2005a; Sansom et al., 2016) contributed to the theme "referrals".

GPs report changes to referral systems resulting in increasing restrictions on referrals to hospital, and a shift in work load from hospital to primary care, combined with changes in patient demographics and demand. GPs also reported more referrals back to GPs who are being required to undertake more follow-up reviews or appointments or consultations. Patient pathways are perceived to be more complex and time-consuming due to "unrealistic expectations of patients" and "hospital doctors lacking resources". Complex referral systems, with hospitals that focus increasingly on specialised medical needs and delays in communication contribute to GPs' experience of fragmentation and a depersonalised healthcare system (Campbell et al., 2015).

> *"One of the problems with hospital medicine is it's very fragmented […], so if you sent somebody in with one thing, they have that sorted, but they don't look at the bigger picture, so they'd come back out and there'd be another thing that was developing so you'd have to refer them to somewhere else, so the fragmented nature of hospital medicine makes general practice quite difficult." (Doran et al., 2016)*

6.5.2 Targets and assessments

Four UK semi-structured interview studies (Campbell et al., 2015; Doran et al., 2016; Hutchins 2005a; Sansom et al., 2016) contributed to the theme "targets and assessments".

Not only did GPs report feeling that management targets, regulations and guidelines increased workload burden (paperwork and bureaucracy) and contribute to stress and loss of job satisfaction, but many felt that meeting government targets (measured quantitatively) was valueless as a measure of quality. Introduction of the Quality and Outcomes Framework (QOF) was felt by some to be a "tick box exercise" which impacted adversely on the doctor-patient relationship.

> *"You spent more time ticking boxes than you did talking to the patients sometimes […] that put more stress on me and I felt it affected my rapport with the patients." (Doran et al., 2016)*

Such monitoring and targets were reported by some older GPs as reflecting a lack of trust and amounting to "micromanagement" from the government. Some thought that payment-related government targets had been to the detriment to the ethos regarded by GPs as fundamental to general practice, as it took away any incentive to do more than meet the set targets.

6.5.3 Doctor-patient relationship

All five UK semi-structured interview studies contributed to the theme of "doctor-patient relationship"

GPs reported feeling that the pressures introduced by increased bureaucracy and government regulation ("impossible targets" and "unrealistic appointment times") had changed the very hallmark of general practice: the doctor-patient relationship. Lack of time with patients meant the ability to practise patient-centred care and continuity of care was perceived to be compromised. As a result, GPs' professional autonomy and values were felt to be undermined, resulting in diminished job satisfaction for GPs and diminished satisfaction for patients "because they're not being given sufficient time to give their history properly and be investigated at the primary care level" (Doran et al., 2016).

6.5.4 Changing role

All five UK semi-structured interview studies contributed to the theme of "changing role".

6.5.5 Increased responsibility

GPs reported feeling that an increase in responsibility alongside organisational changes had occurred: "Cases were getting more complicated, more was being transferred from the responsibility of the hospital to the responsibility of GPs […], I was spending more and more time doing administrative things and less and less time being able to devote my mental attention to the patients in front of me. I just felt more and more stretched." (Doran et al., 2016)

Non-clinical work

GPs also reported feeling that continual organisational changes had fundamentally altered their professional role to a 'government clerk' or a 'data clerk for public health and for management' (Doran et al., 2016). Many felt undervalued and felt that their role had been diminished to that of "serving a management structure which should support them". The GMS contract (2004) was seen to have exacerbated this diminution in role: "it's (general practice) getting more paper-led than patient-led."(Hutchins 2005a). GPs who continued to practice beyond retirement age had often done so because they had been able to delegate their paperwork, leaving more time for patient consultation, the aspect of general practice they enjoyed.

Rate of change

Older GPs who were used to the traditional model - based on a GP becoming a practice principal, and staying in one practice for most of his or her career - note that this model appears to be waning. "Change" was cited as a reason by many GPs for wanting to leave general practice.

> *"We've been bombarded with change…and we're fatigued with it." (GP21, Partner, female, age 57) (Sansom et al., 2016)*

For some, this reflected how the role of the GP had changed over the course of their career. Other GPs mentioned more specific aspects of the role which had changed such as workload, relations with secondary care, and patients. Many of these doctors had become progressively worn down by the period of change, which several of them said had started in 1990 (Newton 2004). Moreover, difficulties were experienced with perceiving the value of changes, many of which were felt to have been made with no long term vision and for "little health gain". Two GPs described feeling a lack of control/influence regarding many changes, and one GP reported feeling that there was very little organisational continuity. (Sansom et al., 2016). GPs described how individual circumstance might affect their ability to cope with the rate of change, with one GP suggesting that more conscientious GPs and older GPs might be less able to cope, and that tolerance to change diminished the longer a GP has been in practice. Feeling worn down by change contributed to feelings of low morale.

6.5.6 Autonomy and control

All five UK semi-structured interview studies contributed to the theme "autonomy and control".

GPs described how increased government regulation and bureaucratic pressure has led many GPs to feel a loss of professional control, and to feel that the traditional autonomy that general practice used to provide had been considerably eroded:

"Once you disempower the locus of control of someone's job ... the job becomes stressful, becomes less enjoyable, and people don't want to do it anymore." (Hutchins 2005a)

"A lot of things feel as if they are out of our control, things like the CQC, seven day service, appraisals, all the box ticking we have to do…a new project, a new prescribing thing, one after the other, they keep coming. And ultimately you decide: do we play the game or do we not play the game (GP18, Partner, male, age 53)" (Sansom et al., 2016)

6.5.7 Re-accreditation

Two UK semi-structured interview studies (one ten years older than the other; Hutchins 2005; Sansom et al., 2016) contributed to the theme "re-accreditation". GPs expressed mixed views about the appraisal and revalidation system. Some found appraisals valuable and helpful and highlighted areas to strengthen through professional development, while others felt they were an additional burden and ineffective (Sansom et al., 2016). Some GPs felt strongly that they should not be exempt from re-accreditation if they continue to work beyond retirement age to ensure competence. However, other GPs mentioned that they would schedule their retirement earlier to avoid their next revalidation.

6.6 Projected Future

6.6.1 Viability of early retirement

Three UK semi-structured interview studies (Campbell et al., 2015; Newton 2004; Sansom et al., 2016) contributed to the theme "viability of early retirement".

Cultural norms of early retirement coupled with good pension provision appear to encourage part-time working and early retirement for GPs in the UK. The 1995 section of the NHS Pension Scheme and so-called '24-hour retirement'[1] were cited by GPs as a way to trade-off ongoing, continuous working and full pension, with early retirement (and/or reducing hours) whilst still receiving an adequate income. GPs with good job satisfaction were more likely to go part time:

"I was full time until 58. I looked at the pension and the pension was very good and I thought, well y'know, it's ridiculous carrying on killing yourself if I can do part time. I did 24-hour retirement and then went back, which is what most GPs tend to do. (Interviewer: Did you have any thoughts at that time about just stopping patient care altogether?). No because I liked the patients. Part-time seemed a nice compromise." (Sansom et al.,2016)

GPs with low job satisfaction reported being more likely to plan to leave as soon as they were financially able. For this dissatisfied group, no manner of practical incentives or inducements would keep them at work:

"What would it take to keep you working: is more money the answer?"

Doctor: "No, absolutely not, because all that would happen is the more money you gave me the quicker I would be able to retire" (Newton 2004)

GPs reported that uncertainty of future health also impacted on decisions about when to retire: GPs wanted to maximise their healthful years post-retirement:

[1] NB. Footnote required to elaborate the meaning of this policy and the meaning of '24-hour retirement'.

"You don't want to leave things too late and not be able to do some nice things before you start getting ill" (Sansom et al.,2016)

6.6.2 Ageing

Four UK semi-structured interview studies (Campbell et al., 2015; Doran et al.,2016; Sansom et al., 2016; Hutchins 2005a) contributed to the theme of "ageing".

Cognitive deterioration and fear of incompetency

Some GPs described how cognitive and physical limitations experienced as they got older gave rise to feelings of anxiety and lack of confidence as they feared "unconscious incompetence". Some feared being an "old doctor" and were concerned that their poorer memory could mean they would be unable to keep up to date. Deteriorating eyesight was noted by some GPs. Some also commented that they were aware that their memory and capacity for learning was declining, and said that they would not want to continue in practice if their capacities were inadequate (Hutchins 2005a).

Resilience

GPs describe feeling that as you get older and stamina decreases, the length of the day is very exhausting and this can impact on GPs' confidence and ability and, consequently, their perceived capacity to continue working in direct patient care.

"There seems to be something that happens when you reach about 55: you start to get feelings of struggling with the work and 60 feels an awful long way away." (GP interviewee in Campbell et al., 2015)

Feelings of tiredness may be compounded for some female GPs who may experience sleep disturbance during the menopause (Sansom et al., 2016).

6.6.3 Investment and commitment

All five UK semi-structured interview studies contributed to the theme of "investment and commitment".

Partnership issues

GPs reported that poor relationships between older and younger partners arising from differences in values or perspectives could lead to opposing views about how the practice should be run. For example, one doctor felt "pushed out" by younger partners over what seemed to be different perspectives regarding the 1990 contract, while another had a similar problem with younger partners:

"We were OK as a team but it had reached the point where we had young new members who, for their own reasons needed their protected time but hadn't thought through the impact that can have on the rest of the team. You reach a crossroads that says: 'Hang on, I can't mop this up'" (Newton 2004)

Such poor relationships resulted in GPs feeling unsupported, less loyal to their practice and having a decreased likelihood of staying on (Sansom et al., 2016). Practice-level changes, such as peers retiring, could also contribute to decisions to leave:

"We've just had three more retirements so nearly all the people who were around when I started have now gone and been superseded by younger, different GPs … my work satisfaction is less and I think a large part of it is because of the changing style of work: the newer doctors work differently. I don't like the way they do it" (GP interviewee in Sansom et al., 2016)

Long-term responsibility

Because GP practices are independent businesses, replacement GP partners are needed for the ongoing viability of the business. Concerns were evident, of current difficulties of recruiting new partners to a GP practice to replace a retired GP partner (Sansom et al., 2016). However, GPs reported that younger GPs may be reluctant to take on partnerships because of the added risks and responsibilities involved.

> *"I think that something has got to be done about increasing the number of people out there seeing patients, because otherwise I think, on the whole, I think it's a very worrying trend: general practice will collapse and some practices have closed already." (GP interviewee in Campbell et al., 2015)*

Financial investment

GPs reported that concern about the future of general practice meant they may be less likely to invest in buildings and make long term commitments.

> *"People are genuinely worried about the future of general practice…they seem to be getting very twitchy about buying into property, making long-term commitments to the service, which is a great sadness" (Sansom et al., 2016)*

6.1 Multiple options and strategies

6.1.1 Flexible working / Reducing working hours

Four UK semi-structured interview studies (Campbell et al.,2015; Hutchins 2005a; Newton 2004; Sansom et al., 2016) contributed to the theme "flexible working / reducing working hours"

GPs report that while flexible working can bring benefits to individual GPs (young and old) such as freedom from paperwork and freedom to pursue other interests it can also increase workload for other GPs if there is difficulty recruiting other partners or locum GPs. This pressure is more keenly felt in smaller practices, with GPs more likely to feel trapped between continuing to work full-time under extreme pressure in order to support colleagues, or to retire completely. GPs report that becoming a locum was seen to offer far less involvement with the practice, which was attractive to some (Campbell et al., 2015). But also, difficulty in recruiting locums precluded many from working part-time (Hutchins, 2005a). There was a tension between not wanting to shift the burden of responsibility onto colleagues, while also not wanting to be the one left with the burden if other colleagues acted (retired or reduced hours) first.

6.1.2 Continue and cope

Four semi-structured interview studies (Campbell et al, 2015;Doran et al., 2016; Newton, 2004; Sansom et al., 2016) contributed to the theme "continue and cope".

With more work shifting from secondary to primary care, combined with changes in patient demographics and demand, GPs report that they don't foresee their working situation improving and they vary in their ability to cope (Doran et al., 2016). Some GPs report finding it manageable while others feel they are just about surviving (Campbell et al., 2005). Resilience to change, or ability to adapt, may be linked to personality type; one GP describes being an experienced GP with a "robust" personality and "cultivating particular frames of mind" while another talks about having "an enormous amount of experience" and "the right type of personality" (Campbell et al., 2015, Newton, 2004). For such doctors, the 'pull' of work

was very evident, with some liking aspects of the work that were causing stress for others, while the pull from external factors was much less.

GPs with more conscientious personalities together with older GPs (over 55yrs), who may be experiencing higher levels of tiredness and reduced stamina, may be less adaptable. This may be a particular issue for older female doctors who can experience menopause-related sleep disturbances during the menopause.

Practical coping strategies employed by GPs include looking at work emails from home or in non-work time to try and stay up-to-date (Campbell et al., 2015), staying late at work, taking work home or changing their appointment times (Doran et al., 2016). Support given through good working relationships within a GP practice were cited as important for helping GPs cope.

> *"People are aware of other people's needs and we work together as a group and I think it is a very supportive practice… I don't think I'd still be in the NHS if I was working in another practice, I probably would have left years ago actually. (Sansom et al., 2016)*

GPs report that where practice-level support is lacking, or a GP feels unsupported, an 'everyone for themselves' culture can develop, where decisions about when to leave are based more on self-survival than what is best for the practice. Two GPs report feeling that in an unsupportive environment, having to take on the responsibility for a practice partner's absence, ill health, or early retirement can add to feelings of burden and stress (Doran et al., 2016). However, in more supportive practices, such scenarios are better managed by the team.

6.1.3 Alternative roles for GPs

All five UK semi-structured interview studies contributed to the theme of "alternative roles".

New professional roles / extended roles

In one study, two GPs reported completing further training to enable them to offer complementary therapies. Both intended to leave general practice; one to become a full-time holistic therapist, while the other intended to work part-time as a complementary therapist (Campbell et al., 2015).

Skills transfer

Alternative job roles mentioned by GPs, that used skills transferable from working as a GP, included appraiser, Clinical Commissioning Group (CCG) lead, advisory committee member, pharmaceutical consultancy work and working for a medical school. However, it was not clear in most cases whether they developed these interests and roles partly as a stepping stone to leaving general practice, or to enhance their knowledge and skills as a GP.

> *"A medical degree is one of the most wide-ranging degrees there is: it's about science, research, communication, empathy, organisation, management - we're pretty skilled people… Other people want me to do other stuff now; they'll pay me good money and treat me very differently to what is currently happening to GPs." (Campbell et al., 2005)*

Professional development / specialisation

One study proposed that for younger GPs, having a medical specialism was thought to provide greater flexibility towards retirement and doctors who already worked part-time in specialist areas outside general practice intended to work entirely in the speciality when they retired (Hutchins 2005a). Other 'retired' GPs undertook locums, or work outside general practice such as Criminal Injuries Compensation Appeal Panel Tribunals or DSS (Department for Social Services) Tribunals (Newton 2004).

Relocation

Changing jobs (to other medical jobs outside general practice) and relocating abroad were reported in one study to account for some GPs leaving UK general practice (Doran et al., 2016).

6.2 Australian case study of part-time working

This section separately presents the findings of the only included qualitative interview study that was with GPs outside the UK (Dwan et al., 2014). As well as being about GPs in a different primary care and health system, the narrower specific focus of this study was on the reasons that Australian GPs preferred to 'work sessionally' – that is part-time (in this study, six or fewer sessions per week). For these reasons, the findings of this study are presented separately, and not synthesised with evidence from the UK studies, which focussed on reasons for and/or intentions to quit general practice more generally.

Flexible working

In this study, many of the GPs "working sessionally" in Australia said that they did so in response to the changing nature of clinical practice, where they were required to work with more complex patients, often with chronic conditions and associated psychological symptoms. Many of the GPs in this study felt that a mix of clinical, non-clinical and unpaid activities attenuated the tiredness one might otherwise feel when working with such patients. Sessional GPs working in Australia reported that they recognised that "inner resources" were central to providing good quality care, especially when working with complex patients "If you're part-time you've got more [inner] resources to be able to offer that particular type of [patient]" (Dwan et al., 2014).

The authors state that for the GPs in this study, the prevalence of complex, chronic illness and the increasing need for psychological management meant that consultations were time consuming and exhausting. They report that flexible working allowed the interviewed GPs to manage various demands, including unrealistic patient expectations of what could be achieved in a 15 minute consultation. For example, one GP reported to be more conscientious e.g. reviewing all the patient records before writing a complex referral and providing lots of information, while several GPs reported choosing to spread their sessions across more days to ensure continuity of care, rather than the same hours across working fewer days.

Concerns about working flexibly included remuneration, which was considered modest, particularly due to the number of patients GPs saw with chronic and complex diseases and the associated unpaid paperwork. Also, several GPs found it slightly more difficult to keep up to date clinically.

Continue and cope

The Australian study may offer a different perspective on why some GP find it easier to cope and continue in the system. One GP suggests that GPs who are able to adapt to the changing health system may only be able to do so because they are less conscientious: "if you are doing general practice well clinically, it is quite challenging. I have seen a lot of lazy GPs that palm things off" (Female GP, 60s).

Alternative roles

Australia sessional GPs said that they valued contributing in both clinical and non-clinical settings, and adapted their work types and hours to achieve this. They said that working sessionally was sufficiently flexible that it allowed them to pursue complementary career goals. All of the interviewed GPs stated that "life's less boring" and "more clinically sustainable and interesting" with flexible work practices (Dwan

2014). Several GPs reported finding working with vulnerable or special needs communities a satisfying complement to mainstream general practice.

All of the Australian sessional GPs interviewed were in full-time paid employment in health related areas, including education and training, policy, research and academia and medical specialities. The authors report that the majority of GPs cited their reasons for choosing to work in another role alongside clinical practice was to manage the stress of general practice. However, some said it introduced variety and helped to reduce boredom. The authors state that other studies have established a link between working fewer hours and reduced stress and greater job satisfaction, and without any loss of patient trust and satisfaction. The authors conclude that sessional work can be seen as both a rational and a highly professional response to changed working conditions.

Doctor-patient relationship

The authors report that the majority of sessional GPs in the study felt that something had changed over recent years, in part because the balance of conditions within the consultation had altered. They perceived a shift away from traditional "disassociated problem solving" involving a mix of semi-acute and chronic care, towards the management of multiple, chronic diseases.

"I think all general practices are finding that we're seeing more and more complicated work…. Most of the people who are booked up are people with chronic mental health issues from pain, compensable issues, elderly people with complicated diabetics" (Dwan 2014).

Patient demands

UK studies indicate that patient demands may be higher when working with growing elderly populations with multiple morbidities and social care needs (Campbell 2015) or in areas with high numbers of asylum seekers (Hutchins 2005). This was also also found in this Australian study where GPs reported that the prevalence of complex, chronic illness and the increasing need for psychological management meant that consultations were time consuming and exhausting. This Australian study adds to the literature on patient expectation, with a GP describing how high patient expectation impacts on clinical practice:

> *"Most of my patients … wouldn't be happy if you just printed out a script and handed it to them … What might happen if you do take antibiotics? What might happen if you don't take the antibiotics? [What are] the reasons for taking it? [What are] the reasons not for taking it, you know? I think that takes up a lot of time and I think that's quite exhausting".*

Lack of support

Lack of perceived support towards GPs from the media appears not to be limited to the UK. Australian media portrayal of sessional GPs was reported to be also critical, suggesting that GPs working less than full time reflected a lack of commitment and that sessional clinical practice is a personal indulgence that disregards the needs of the community. This is refuted by Dwan et al., 2014, who suggest that their study findings show that working part time successfully addressed the disadvantages of working full time in clinical practice.

In parallel with the UK media coverage, Dwan et al., 2014 et al suggest that the professional commitment and breadth of contributions made by sessional GPs is often undermined in the news media.

Job satisfaction

In this study, many of the GPs reported feeling that full-time general practice did not allow them to be the best GP they could be.

> *"[Like] most GPs I want to do a decent job, and I actually always found that if I go beyond a certain number of sessions I don't think I am doing a decent job anymore" (Dwyer et al., 2014).*

Wellbeing

Similar dynamics in wellbeing experienced by UK GPs were expressed by sessional GPs in Australia.

> *"I had just had enough of the burden of it, I was worn out" (Dwyer et al., 2014)*

The strain of full-time clinical practice was reported to strongly influence many GPs' work decisions to work part time. Sessional clinical practice was seen to offer "downtime" , the opportunity to "recharge your batteries". It kept them "fresh," provided time to "catch your breath", and allowed GPs to "maintain good mental and physical health". Therefore, many of the GPs felt that a mix of clinical, non-clinical and unpaid activities attenuated the tiredness one might otherwise feel in full time clinical practice.

Work-life balance

Cultural influences on work-life balance may be particularly strong. In UK studies, there was no clear gender bias reported for GPs choosing to work less than full time, with Hutchins 2005 reporting that GPs of both genders wished to adjust their working hours. However, in this Australian study, the authors suggest that gender strongly influenced female participant's decisions to work less than full-time. Thirteen female GPs and one male GP had dependent children, but only the man did not mention his children or family during the interview. Three of the mothers commented that their spouse's employment required them to work sessionally in order to manage the household and caring responsibilities. A further two women with adult children had significant caring responsibilities

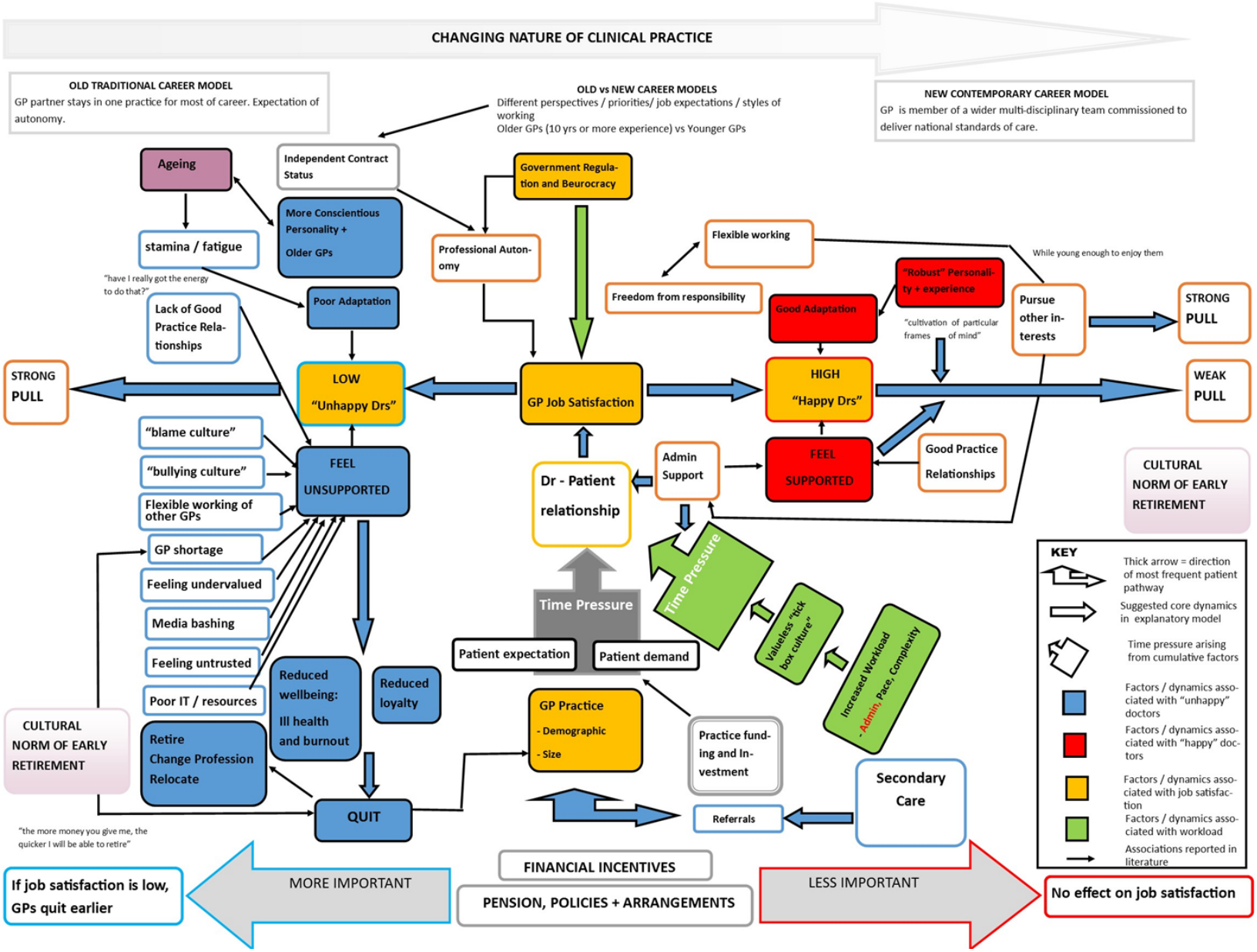
6.1 Explanatory model and narrative

Themes emerging from the qualitative synthesis of semi-structured interview studies conducted in the UK were used to construct a pictorial explanatory model. Applicability of the explanatory model was confirmed following feedback on the model from both PPI and researcher stakeholders at discussion group meetings.

This section and the flow diagram on the following page (Figure 10) provides an overview of the key contexts and factors that were found to relate to GPs quitting or intending to quit patient care. The three different main 'domains' in the flow diagram – factors associated with low job satisfaction, high job satisfaction, and those linked to the doctor-patient relationship - are then described separately on subsequent pages (and in three sub-diagrams: Figure 11, Figure 12, Figure 13).

As historical context to the more detailed factors identified, the career path of GPs in the UK has changed considerably since the 1990s. Today's GP is expected to be a member of a wider multi-disciplinary team commissioned to deliver national standards of care and has a role barely recognisable to the one many older GPs remember, where GP partners tended to stay in one practice for most of their career and there was less regulation and an expectation of autonomy. In the current contemporary career model, GPs are expected to give up autonomy in many areas of their job and are expected to accommodate increasing government regulation and bureaucracy, which adds an increasing burden of stress related to workload, particularly 'paperwork'/record-keeping.

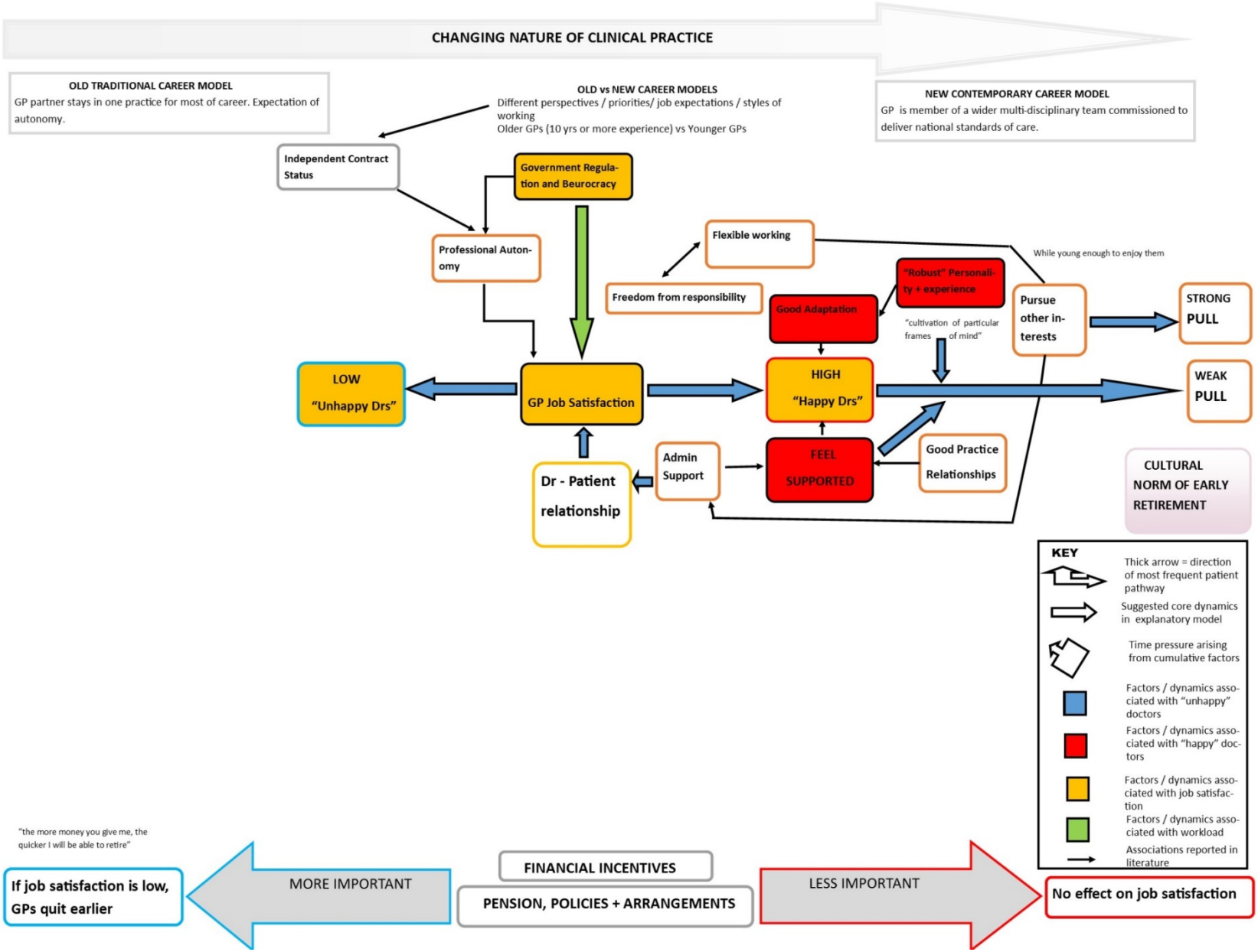
Figure 10: Flow diagram of factors contributing to GPs leaving general practice



Job satisfaction appears to be a key indicator of whether a GP will successfully adapt and remain in practice, or will become overwhelmed by external influences and pressures and leave the profession. Many GPs report that job satisfaction directly relates to the quality of the doctor-patient relationship, and is dependent on the time available for GPs to spend with their patients.

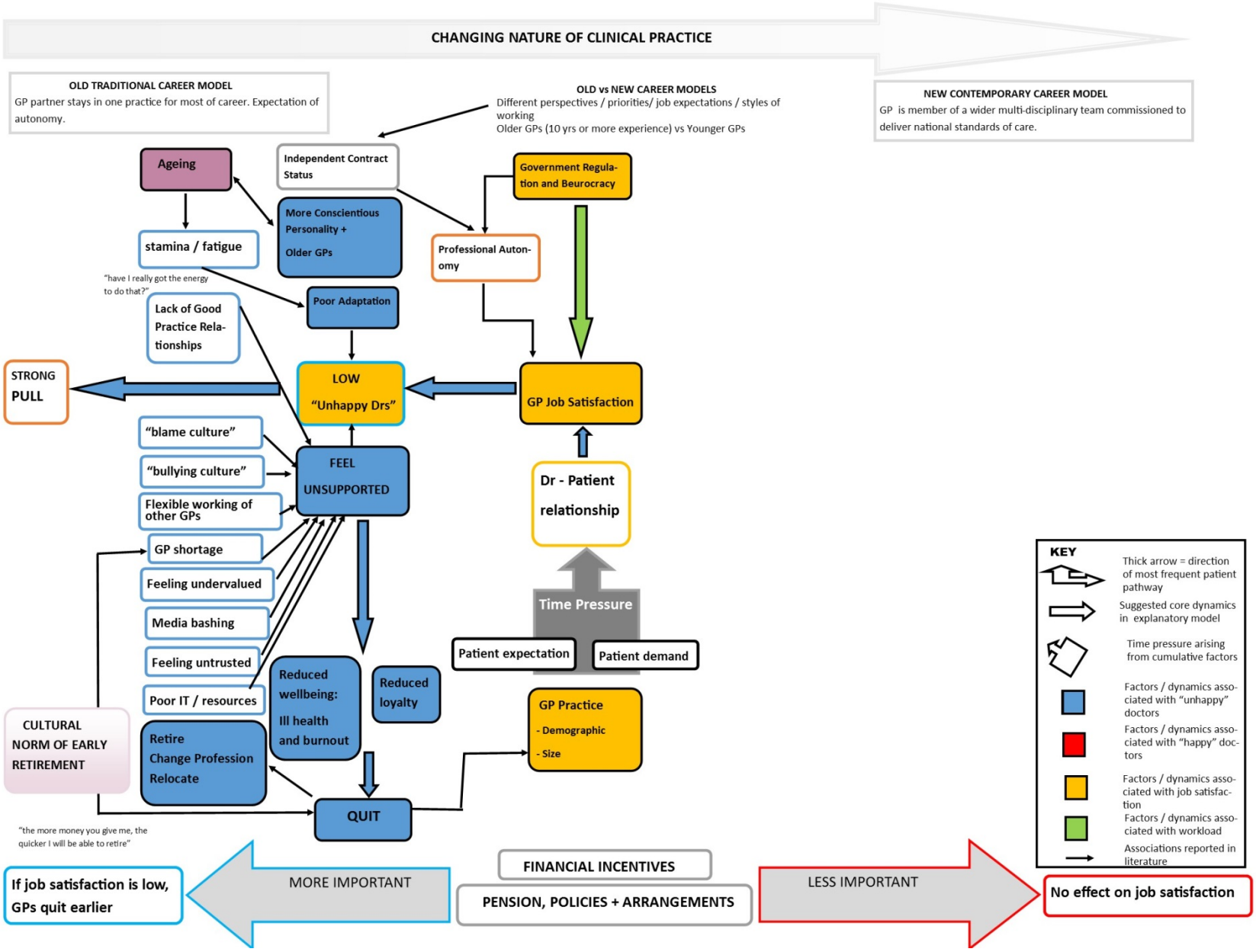
GPs with high job satisfaction describe feeling supported by good practice relationships (Figure 11)

Figure 11: Factors contributing to UK GPs' high job satisfaction



GPs with low job satisfaction (factors summarised in Figure 12) describe low morale and feeling unsupported; some describe a lack good practice relationships, work in a “blame culture” where they fear making mistakes and litigation, describe a “bullying culture” from management level , as well as feeling undervalued by patients and government, micromanaged and untrusted by the government, poorly trained in IT and under-resourced and poorly portrayed in the media.

Figure 12: Factors contributing to GPs' low job satisfaction

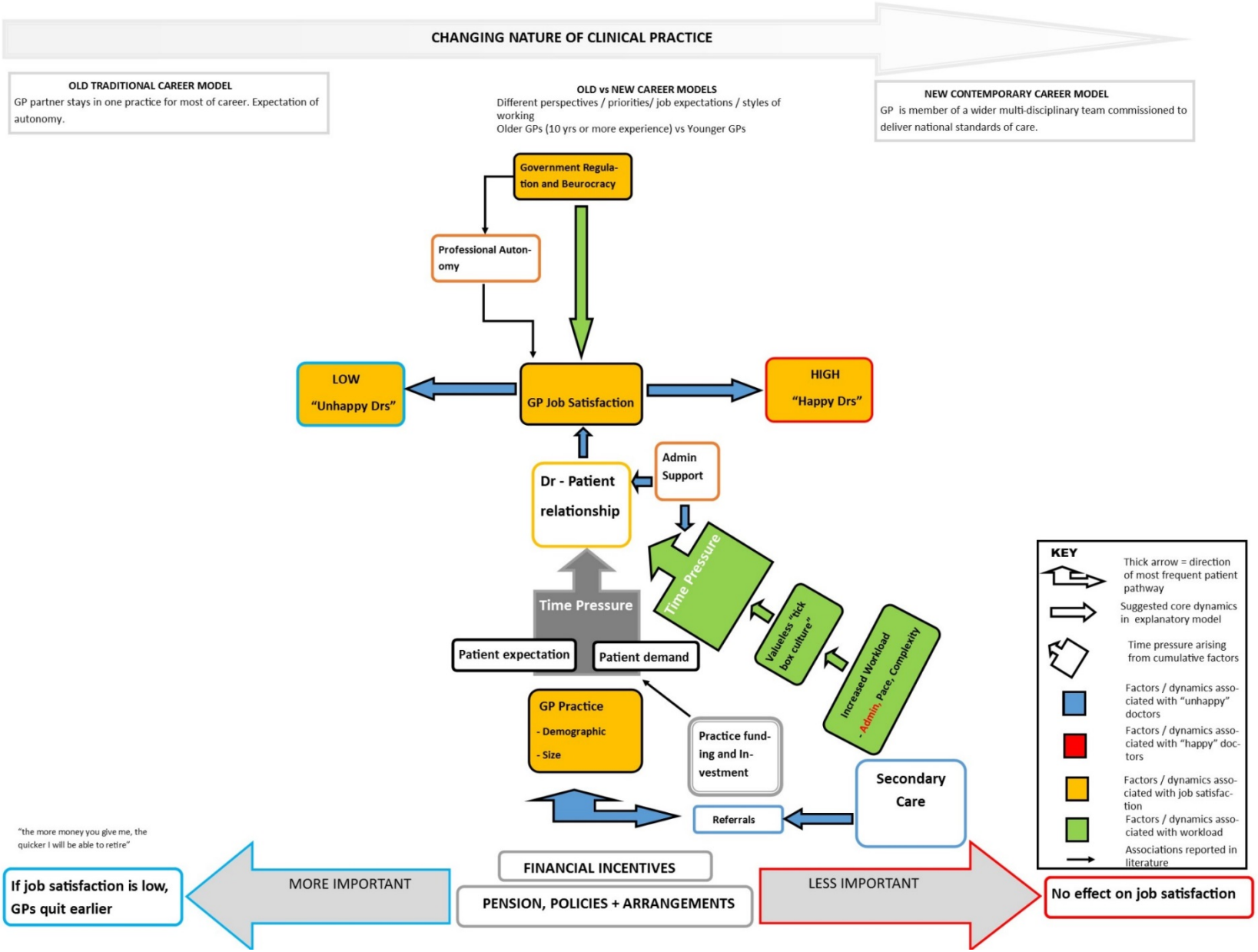


GPs with a more conscientious personality as well as older GPs may find it more difficult to adapt, with older GPs describing physical symptoms of fatigue and loss of stamina. This may be particularly pronounced for older women experiencing sleeplessness due to the menopause. GPs with low job satisfaction are more likely to experience reduced feelings of wellbeing, and experience ill health and burnout. They are also less likely to experience feelings of loyalty to the NHS. This is exacerbated by a cultural norm of early retirement. Financial incentives and pension arrangements are more important to GPs with low job satisfaction, can play a significant role in decisions to retire early.

GP shortages through poor recruitment and retention mean that demand currently outstrip supply (for replacing retired GPs) and is creating pressure on full-time GPs who may feel trapped and unable to retire or reduce their hours. Patient demand (increased number and overall expectations) coupled with a shortage of GPs and available appointments adds to a feeling of increased pressure which leads some GPs to consider retiring. Patient demands may be higher in areas of higher deprivation and with populations with multiple health and social problems. The impact of GP shortages are most keenly felt in smaller practices, with some GPs feeling trapped between continuing to work full time under extreme pressure or to retire completely because they feel that working less than full time in clinical practice is not a viable option for them.

With regard to quitting patient care, there appears to be a tension between not wanting to shift the burden of responsibility onto colleagues, while simultaneously not wanting to be left with the burden if other colleagues act first (i.e. retire or reduce their hours). This situation is compounded by pressures from increased workload, particularly from administration related to government regulation and bureaucracy as well as from secondary care (Figure 13).

Figure 13: Additional factors contributing to pressure on doctor- patient relationship (and job satisfaction)



Increased complexity in referral pathways from secondary care, hospitals providing increasingly specialised services (i.e. shifting more care to primary care) and delays in communication all contribute to GPs' experience of fragmentation and a depersonalised healthcare system. These perceptions are compounded by feelings of uncertainty over the future in terms of NHS investment and commitment to general practice. For some, poor relationships between older and younger doctors and/or opposing views about how the practice should be run resulted in older GPs feeling unsupported, less loyal to the practice and more likely to leave. Younger GPs may be more reluctant to take on partnerships because of the added responsibilities and risks involved. Current GP shortages impact on confidence for the maintenance of thriving GP practices and GP general concern about the future of general practice means they may be less likely to invest in buildings and make long-term commitments.

In summary, GPs with poor job satisfaction report feeling overworked and unsupported. Many feel part of an over-bureaucratised system, and describe being at the front-end of a service unable to deliver what it promises. Combined with changing relationships with patients and interfaces with secondary care, and the gradual sense of loss of control over large parts of the job, many GPs report a reduction in job satisfaction. Lack of time with patients is perceived to compromise the ability to practise patient-centred continuity of care and, with it, the GPs' professional autonomy and values, resulting in further diminished job satisfaction. Once job satisfaction has become negatively impacted, the combined pressures of increased patient demand and workload together with other stress factors such as poor IT resources, negative media portrayal, poor practice relationships and a "bullying" or "blame" culture has left many feeling unsupported and vulnerable to burnout and ill health, and, ultimately, to the decision to leave general practice.

7 Discussion

7.1 Key findings from the synthesis of quantitative survey findings

The 23 UK survey studies which focussed either on GPs' intentions to quit fully from general practice (e.g. early retirement), reasons for actually quitting general practice/patient care, or intending to reduce hours/working part-time, all revealed a recurrent and linked set key job-related factors which are associated with leaving, intending to leave, or reducing their hours devoted to patient care. They are: workload, job (dis)satisfaction, work-related stress and work-life balance. These high-level factors associated with quitting are all inherently related the nature of being a GP and working in NHS general practice although they may also be related to lifestyle/personal expectations and family circumstances.

The four studies that included regression-based multi-variable analyses the consistent determinants of GPs wishing to retire earlier were: older age, having low job satisfaction (or job dissatisfaction) and high or intense workload. Where measures of work-life balance or flexibility/choice in relation to job demands were included in the analysis, these were also often statistically significant. There seems to be a complex interplay between these three key broad factors – satisfaction, workload, and work-life balance/flexibility – with the third factor possibly mediating the effects of workload on job satisfaction. While gender was not found to be an important determinant after adjusting for age and other factors, this does not preclude that the balance of these other main determinants might be different for men and women (however, separate multivariable analyses of male and female GP data was not conducted). Social deprivation of area or practice population was not associated with intention to quit in any of the three multivariable analyses that included it as a potential factor. The finding (in one study) that either small practices or larger than average practices are associated with a greater intention to quit is intriguing, and worth exploring with GP stakeholders to understand why this might be.

The UK studies which reported the stated reasons of GPs for intending to quit patient care or retire early also underlined the importance of the main factors already revealed to be associated with assessed variations in intention to quit, namely: job satisfaction, workload, work-related stress and work-life balance. However, the studies of the self-reported reasons for quitting general practice reveal much more detail within and beyond these reasons – for example, underlying problems of high workload appear to be issues relating to both high clinical work hours, more demanding patients and perceptions of excessive paperwork/administration. Also, job dissatisfaction (and perhaps also work-related stress) is now reported alongside undesirable changes in the NHS, excessive managerial duties and fear of making mistakes.

This underlines the dangers of interpreting survey findings in terms of just the most frequently cited reasons, or the statistically significant associations. These studies show clearly that there are many other more specific reasons, and operating at different levels,

than the top-level work-related factors and which may be important to individual GPs in their decisions to quit patient care or go part-time. The survey evidence suggests there will be many GPs who have good job satisfaction and low work-related stress etc., but who nevertheless still want to quit direct patient care or retire early for one or several of the many other reasons reported. These are ultimately individual (or at least family/couple) decisions, and focusing on 'averages' or overemphasising the most frequently cited reasons may overlook other reasons (like mental health problems, or fear of litigation) that affect significant minorities and may be amenable to intervention.

As expected, age was an important determinant of intending to quit or reduce direct patient care, the most dominant association being that older GPs of both genders were more likely to quit fully or retire early. However, gender was more likely to be a factor determining preferences related to working reduced hours and taking a career break. While surprisingly few studies (apart from the multivariable analyses) examined associations of quitting with both age and gender together, there are clues in many of the studies that there are substantial differences in the main determinants of quitting or part-time working for, for example, younger female GPs and older male GPs. While age is clearly an important direct determinant of intentions to quit, it is also a proxy for various other potentially important factors, such as position/contract type within a practice, and there may also be cohort effects associated with differences in expectations and administrative burdens when becoming a GP, and altered patient and other demands over time.

Unlike the other ways in which GPs may quit practice, intentions to take a (temporary) 'career break' appear to be more influenced by a specific range of 'pull' factors than by negative 'push' factors to do with the job or workload. The main reasons GPs say they will be taking a career break are to work abroad, to have or look after children, or to engage in research or further study. Although the stated reasons for intending to take a career break seem fairly different to those related to intending to permanently quit patient care (e.g. reasons for early retirement) or intentions to reduce working hours, many of the barriers that they say would prevent them from returning to work as a GP relate to negative perceptions about the changing job of being a GP, high workload, low job satisfaction, unsociable hours, excessive administrative work, and recurrent and unwanted changes in the way the NHS and primary care is organised (now including revalidation).

Finally, the UK studies of the more detailed self-reported reasons for intending to quit or actual quitting also showed that intentions to quit general practice are not exclusively about the main job-related 'push' factors (workload, work-related stress, job satisfaction and work-life balance). In one study, among the factors cited more than a third of older GP principals as having a 'great influence' on the early retirement intentions of (Luce at al 2002) these GPs, were: 'pursuit of other interests' and 'financial ability to retire'. GPs' stated reasons for having actually left general practice show a larger range and mix of both job-related 'push' factors and some family and leisure-related 'pull' factors than the survey studies examining associations between variables. A number of more specific factors

emerged in these studies - or, perhaps, have come to be more important by 2015 - such as: the media's attacks on the medical profession, and 'goalposts being moved too often' (presumably referring to changes in the policies and regulations affecting the profession of general practice and working in the NHS), 'concerns about appraisal and revalidation' and feeling a 'loss of autonomy and professional control' (Doran et al., 2015). Other specific factors that emerged for more than a third of GP leavers in this comprehensive and recent study were that 'my income was falling' and my 'remuneration wasn't enough for the amount of work I was doing'. In other studies, and prior to this survey, financial factors were both less likely to be mentioned as important and were more often about the financial ability to retire.

7.2 Key findings from the synthesis of qualitative research

The thematic analysis of four qualitative interview studies with UK GPs, two from 2015 and 2016, and two older ones from 2004 and 2005, yielded five overarching types of factors related to GPs leaving or intending to leave direct patient care or reduce their hours, together with more specific sub-themes underlying or linked to these five factors. These are probably most easily summarised in the pictorial explanatory framework that was developed from them, on p.81 (Figure 10). All of these qualitative studies were judged to be of reasonable to good quality.

These factors were, firstly, GPs experiencing working as a GP as undoable and unmanageable; due to high/increasing administrative workloads, high/increasing patient demand (both number of patients, and their complexity and higher expectations), together with a perceived lack of training and resources to cope with these pressures. Secondly, low morale, which within the thematic analysis was associated with reductions in the perceived value of GP work (with loss of identity), and changed professional culture in relation to a range of aspects of work such as a more target- and standards-driven reward system, multi-disciplinary team-based working (yet, for some paradoxically, also lone working/isolating culture), more aggressive top-down managerial culture within the NHS, and more widespread norms and expectations for early retirement. Low morale was also seen as associated with a perceived lack of support from both government and political parties, and negative portrayals of GPs by news media. Morale was also closely linked with job satisfaction (or dissatisfaction), neglect of personal wellbeing/health and feelings about work-life balance.

The third theme from the qualitative synthesis was the impact of organisational changes. The perceived key changes or factors under this theme were changes in referrals – both restricted opportunities to refer to secondary care, and higher numbers of and more complex referrals from secondary care – a greater focus on targets and assessments, and fears about re-accreditation (including evidence that some GPs might retire early in order to avoid re-accreditation). Some of the organisational changes had imposed increased clinical and non-clinical responsibilities and work on GPs. Together such changes were believed to

have undermined some of the basic tenets and traditional expectations of being a GP, such as the doctor-patient relationship and having autonomy and control over ones clinical work.

The fourth theme was how GPs projected or envisioned their future, which related to ageing, the financial viability of reducing hours or retiring early, and to what extent GPs were personally committed and financially invested in their practices. This included problems linked to whether younger GPs wanted to take on the responsibility of becoming practice partners, and also possible tensions between older and younger GP partners (in the way practices are run, in major investment/refurbishment decisions, or in relation to planning for partner's retiring and needing new partners to buy out their share of a practice).

Finally, the fifth theme and group of factors was called 'Multiple options and strategies' and referred to the various ways in which GPs of different personality either continue and cope or – perhaps if less committed or less resilient, or if they can simply afford to financially – decide to leave or go part-time. This theme also highlighted the major importance of flexible working, working reduced hours (e.g by becoming a locum) as a method of coping and regaining work-life balance and job satisfaction. For others, the adoption of alternative work roles outside general practice, often part-time, allowed use of and learning other skills – either as relief and variety from working as a GP, or for some as a potential alternative career. The kinds of alternative roles and options GP interviewees mentioned included becoming complementary therapists, CCG lead, advisory committee members, or working for pharmaceutical consultancies or teaching in medical schools. Like part-time working, for some these might be clear routes for quitting general practice; but for others, such variety of roles and opportunities for job satisfaction may keep them in general practice.

Overall, the rather negative picture portrayed by the four qualitative interview studies was that GPs with poor job satisfaction are also those who feel overworked and unsupported. Many feel part of an over-bureaucratised system, and describe being at the front-end of a service unable to deliver what it promises. Combined with changing relationships with patients and changing interfaces with secondary care, and the gradual sense of loss of control over large parts of the job, many GPs report a reduction in job satisfaction over time. Lack of time with patients is perceived to compromise the ability to practise patient-centred care and continuity of care and, with it, the GPs' professional autonomy and values; resulting in further diminished job satisfaction. Once job satisfaction has become negatively impacted, the combined pressures of increased patient demand and workload together with other stress factors such as poor IT resources, negative media portrayal, poor practice relationships and a perceived "bullying" or "blame" culture has left many feeling unsupported and vulnerable to burnout and ill health. Ultimately, for some this leads to their decision to leave general practice altogether or to substantially reduce their clinical hours.

In December 2016, during the final write-up of the review another qualitative research study, that was missed by our grey literature searches, came to our attention and should

have been included (Ipsos MORI, 2015). Their findings relating to understanding GPs' decisions to leave general practice were based on interviews conducted in Autumn 2015: 41 in-depth telephone interviews with GPs "seriously considering leaving and in circumstances that may present challenges to remain in practice" (p.3) and 23 in-depth telephone interviews with GPs who had left or were in the process of coming back into general practice (including those who had emigrated). The detailed findings largely corroborated those that emerged from our synthesis of qualitative studies, including that workload was the overarching factor causing GPs to leave. However, they also elaborated four groups of "deeper frustrations" under the following headings: 1. A changed GP-patient relationship attributed to changing patient demographics and a shift in patient attitudes; 2. Changes to the role of GPs, including additional responsibilities from outside healthcare and a different relationship with secondary care; 3. Changing ways of working including longer and more intense hours of work, and; 4. Feeling misunderstood and undervalued as a profession. Despite many GPs in this research study not wanting to leave the profession, some had concluded that the 'traditional model' of general practice was no longer sustainable. This latter view particularly related to the appeal of becoming a partner in a practice.

7.3 Strengths of our review methods

This systematic review has been conducted by an experienced and collaborative review team, addressing clear review questions, and using a pre-specified and published systematic review protocol (PROSPERO 2016: CRD42016033876) and search strategy. In relation to search and screening methods, we worked closely with the project's information specialist and other experienced information specialists to design the most effective possible search for obtaining relevant studies in bibliographic databases, and had robust methods for testing and refining our inclusion criteria and decisions. We found substantially more studies than a recent literature review that had a similar review question (Campbell et al., 2015).

In terms of involving relevant stakeholders in the review, several GPs on the team of co-investigators were involved in the development of the review protocol, and two GPs have been closely involved in the conduct of the review (a GP trainee, and an experienced GP and Professor of Primary Care). Patients have also been involved, both as co-investigators in the wider mixed methods project and through contributing to a PPI workshop which presented and discussed emerging findings from the qualitative and quantitative evidence syntheses Reassuringly, the PPI workshop mainly endorsed our emerging interpretations. However, in the following section we pull together the most insightful issues highlighted by our PPI group or those specific issues which seemed surprisingly absent from the qualitative and quantitative stduies (see APPENDIX E for a fuller description of that discussion).

We also used established methods of quality assurance for systematic reviewing – either two reviewers making independent inclusion/exclusion decisions, or checking by a second reviewer with independent assessment of a sample of included studies (for data extraction and quality assessment). Although there are no standard and widely endorsed tools for

assessing the quality of the diverse types of studies included, we used adapted tools that are appropriate and proven for use with qualitative research studies and for a range of survey-based studies.

Finally, we have also reported the systematic review fully in this report according to PRISMA guidelines for reporting systematic reviews.

7.4 Limitations of our review methods

Although we used the most appropriate and established quality assessment tools that we thought were relevant for the study types we would find, the tool we adapted and used for the quantitative survey studies had a few limitations. First, like many other quality assessment tools, it does not give a separate score/assessment of study design features and reporting quality. Second, the judgements about applicability of a given study's findings to all GPs in the UK NHS in 2016 were based on subjectively weighing up information such as the age of the study data, the geographical scope, whether it was limited to certain types of GP (e.g. older/younger, practice principals/non-principals), whether differences were reported between respondent characteristics and target GP population characteristics, and – for non-UK studies - whether the health system and organisation of primary care in a given country was believed to be similar or not to the organisation of NHS general practice.

We pragmatically focussed on either survey-based (mainly quantitative) studies or qualitative research studies that involved the formal qualitative analysis of GP interview data. However, some of the survey studies also collected and reported some qualitative data, in the form of some written answers to free-text or open questions. One survey study (Evans et al., 2002) in fact was purely a collation (without any evident analysis) of selected free-text responses to questions about early retirement, part-time working and taking career breaks. We did not incorporate or separately analyse such data; it was typically neither rich enough to add reliable insights to the qualitative evidence synthesis, nor representative enough or reported in enough detail to complement the quantitative survey response data.

7.1 Key insights about our findings from our PPI representatives

Our emerging review findings, from both the qualitative and quantitative evidence syntheses, were presented in summary form and discussed with three experienced members of our institute's PPI group (i.e. members of the public with experience of using health services and being involved on research projects as patient representatives). Although they endorsed our emerging findings (and did not contradict any), they also provided invaluable additional insights and reflections to extend our interpretations.

In relation to the possible factors underlying early retirement decisions, the PPI group thought common GP preferences to retire early might partly stem from GPs having greater 'expert' awareness of age-related health deterioration, and therefore a greater incentive to plan for a healthier (earlier) retirement. Among the health factors which might influence decisions to leave practice, the PPI group thought it conspicuous that neither the qualitative

or qualitative studies had revealed information about GPs' use of destructive/unhealthy "coping strategies", such as misuse of alcohol or drugs. A healthier coping strategy mentioned, which might form part of proposed solutions to work-related stress and fatigue, could be increased holiday entitlement.

At the practice level, a number of the points made by the PPI group involved speculation about the suspected lack of good HR skills (by implication, among GP partners) and support within general practices. It was recognised that good practice relationships play a key role in GP retention, both by reducing disagreements or stress directly, and by providing avenues for support. This included the critically important relationship between the practice manager and the GP partners. Improved HR skills or support could play a role in both recruiting practice managers who fit/work better with the GP partners, and enable GP partners to manage/use their practice manager more effectively. The PPI group speculated that poor practice relationships might partly explain the finding in one survey study that GPs were more likely to intend to quit if they belonged to small practices and large practices (than in medium-sized practices); they thought that in larger practices relationships between GPs might be less strong and it would be harder to get everyone together for communication or relationship building.

In relation to the potential solution of enabling more GPs to adopt flexible working patterns, our PPI group speculated that this could have various negative knock-on effects on the doctor-patient relationship, with potential implications for increased referrals to secondary care. Similarly, they thought that if solutions to GP retention involved increasing the use of locums (instead of practice partners and salaried GPs) then there would be potential reductions in the continuity of care associated with having a good doctor-patient relationship.

7.2 Limitations of the current evidence base

There were few (only 4) large surveys containing comprehensive questions (variables) that capture a range of potential determinants of quitting, and which are therefore amenable to multivariable analyses. Most studies only examined the association of a single quitting construct (e.g. intention to reduce work hours, or planned retirement age) with a few variables and only one variable at a time (bivariate associations). The most commonly used quitting construct/question was GP intention to retire/quit direct patient care within 5 years (or sometimes 2 years), used in 8 studies. But even this apparently standard question was asked in a number of different ways: for example, "likelihood would leave direct patient care …" ; "likelihood would leave medical work entirely …"; or "intend to leave within 5 years". Questions relating to work part-time or about preferences for part-time working probably varied even more. Only three UK studies and no non-UK studies had any focus on factors relating to taking career breaks, and no studies explicitly examined the benefits and determinants of flexible working (although the implied importance of flexible working in

relation to preferences for part-time working, in the lead up to retirement, or the freedom to avoid out-of-hours/on call duties was evident in some studies). While health reasons emerged as a contributing factor to early retirement decision-making, including work-related stress and mental health problems, no studies specifically explored health or sickness-related retirement.

By definition, unless they are panel or repeat surveys of the same GPs at different time points, most questionnaire surveys of GPs provide a snapshot of factors in a particular month or year. They therefore capture the absolute levels of perceived factors, but do not capture prior levels or prior intentions or expectations. What is clear in many of the responses in both the quantitative surveys (e.g. of self-reported quitting factors) and from the qualitative evidence synthesis is that many of the causes of quitting or going part-time have a clear temporal element; for example, they relate to widening gaps between initial expectations of being a GP and current reality, or the cumulative effect of recurrent NHS organisational changes. It is therefore not only the level of given factors at a particular time point which may be the trigger for an individual GP quitting, but their departure from prior expectations or their cumulative effect on job satisfaction over a number of years.

Related to these temporal aspects, a few survey studies highlighted potential mediating factors such as 'commitment' or 'emotional exhaustion' (a key component of established instruments for assessing 'burnout') – which may attenuate or accelerate the effects of job satisfaction on intentions to quit. However, few studies collected the data about such psychological constructs and those that did were often not large enough to enable the kind of statistical modelling (e.g. structural equation modelling) that might enable exploration of how they are related to other factors and outcomes.

There were only five qualitative studies of GPs (four based on interviews UK GPs) all of which were judged to be of good to reasonable quality. However, most of the studies failed to make explicit the theoretical or ideological perspective of the authors/interviewer, and the Australian study (Dwan et al., 2014) did not adequately describe the data collection methods or the study context adequately. The interview studies with UK GPs by Hutchins (2005a) and Newton (2004) pre-date a number of substantial changes in the organisation of general practice and the remuneration of GPs and general practices, which probably limit their generalisability to general practice in 2016.

7.3 Research recommendations

On the basis of the strengths and weaknesses of the existing quantitative survey and qualitative research, the following research recommendations are made:

- Larger survey datasets (i.e. of more GPs/ex-GPs), which may allow:
    - more rigorous multivariable analysis of quitting behaviours/intentions by gender (and age-with-gender)

  - the use of statistical methods (e.g. factor analysis and discriminant analysis) to identify distinct subgroups of GPs with different main reasons for intending to quit/retire or intending to work on a part-time basis.
- Use of more accepted and standard definitions, and standardised questions, for eliciting views about the four key constructs which dominate explanations of doctor/physician quitting behaviour: job dissatisfaction, workload, workload-related stress, work-life balance. Perhaps five key constructs, if it is acknowledged that job dissatisfaction and job satisfaction are discrete concepts (and not opposite ends of the same continuum)
- In addition to better defining and distinguishing some of these more established concepts that are widely used to explain why GPs retire early or choose to work on a part-time basis, mixed methods or qualitative research might characterise the role and potential importance of other underlying psychological constructs which some studies have highlighted (such as 'resilience' and 'commitment') and around which GP retention initiatives might be based.
- More data collection and analysis of actual quitting behaviour – both associated factors and self-reported reasons for quitting/retiring, working reduced hours or not returning to work after a career break. A key focus for such research should be to understand how flexible and part-time working, while often representing a loss of GP capacity in the short-term, may enable GPs to stay in the clinical workforce in the medium and long-term.
- Research is needed to describe whether general practices have effective and appropriate HR (human resources) policies and practices, how to support the wider adoption of such policies and practices, and to what extent these support greater job satisfaction and health and wellbeing at work.
- The potentially significant role of poor health and age-related decline (e.g. failing eyesight) or fatigue (e.g. sleeplessness associated menopause), and associated fears about competence and litigation, was highlighted by a few studies in relation to early retirement and part-time working, but otherwise not well researched.
- Research might also be needed to understand the complex interplay between retirement decision making by GP partners, and the business ownership, financial and management challenges of finding new GP partners to join/invest in practices.

8 Conclusions

GPs in different countries leave general practice for a wide range of factors; both negative job-related 'push' factors and positive leisure, retirement and home life related 'pull' factors. While some factors clearly operate at an individual, personal level – such as the financial ability to retire, health, family and marital circumstances, or good/poor relationships between practice partners – other factors operate at the level of the general practice, the whole profession or the local or national health system (e.g. media portrayal of GPs, service reform and performance targets, CQC inspections and professional revalidation).

Nevertheless, for many UK GPs, for whom we had data from 23 survey studies and four qualitative interview studies four closely related job-related factors seemed to play a major part in decision making about both early retirement and part-time working: workload, job (dis)satisfaction, work-related stress and work-life balance. These factors were prominent in studies of both intention to quit or reduce hours and actual decisions to quit or go part-time. However, there were clearly many other detailed factors involved for some GPs, that either underlie these higher level factors (e.g. health service reform fatigue, or unsupportive practice partner relationships) or may combine to influence an individual GP's decision to quit general practice or reduce the hours devoted to it. While many of the drivers of GP dissatisfaction, high workload and work-related stress seem to be at the level of the health system, medical profession or within a GP's own general practice and the population it serves, how GP's cope with these problems may be amenable to interventions at the individual GP level.

Moreover, both the questionnaire survey and qualitative interview evidence indicate that it is not just 'unhappy GPs' (e.g. those with poor job satisfaction and high workload) who wish to reduce their hours or retire early. Early retirement is now a cultural norm and lifestyle choice within the medical profession for those who can afford it, and who wish to spend more time pursuing their own interests or caring for their family or other loved ones.

While there were differences between male and female GPs in their intentions or preferences for part-time working, they were inconsistent between studies and did not adjust for current hours worked, so it is difficult to draw clear conclusions. However, overall younger female GPs and older male GPs were generally more likely to want to work part time. Only groups already working reduced hours wished to increase their hours. One of the survey studies and the qualitative evidence synthesis suggested an association between opportunities for part-time working and delaying retirement. That is, for some GPs, being able to work part-time (and more flexibly) may incentivise them to retire later. In contrast, there is no evidence that financial incentives would discourage early retirement – possibly the opposite.

GPs' intentions to take a 'career break' appear to be more influenced by a specific range of 'pull' factors than by negative 'push' factors to do with the job or workload. The main reasons GPs say they will be taking a career break are to work abroad, to have or look after children, or to engage in research or further study. Although the stated reasons for intending to take a career break seem fairly different to those related to intending to permanently quit patient care, many of the barriers that they say would prevent them from returning to work as a GP relate to negative perceptions about the changing job of being a GP (e.g. high workload, low job satisfaction, unsociable hours, excessive administrative work).

There were 12 survey studies of GPs outside UK, from 6 different countries (including 4 from Australia) and about both early retirement, quitting general practice soon after qualification and working part-time. Despite the substantial differences in the way general practice is organised in these countries, among the leading reasons for intending to retire early in Australia, New Zealand and Canada were associated with low job satisfaction and pressure of work. One of the Australian studies assessed the factors that GPs said might encourage them to retire later than currently planned; more than a third stated better remuneration, higher staffing levels, more general support, more flexible working hours, part-time work, and reduced workload – similar to the reasons emerging from UK studies that asked an equivalent question. The main stated determinants of part-time working in Australia and New Zealand were age, poor work-life balance and having family or child care responsibilities.

There is clearly scope to influence the retention of GPs in the primary care workforce at a number of levels in the health system. Given the consistency and strength of perceptions about workload and job-related stress, either additional staff resources and/or methods of working that enable care to be delivered in a more person-centred way and with less administrative burden would help. Much of the workload related stress appeared to be associated with the higher administrative burden of being a GP or a practice partner. However, some was also associated with the experience of having to see more patients, more complex patients, but with the same traditional constraints on appointment times. Many of these issues can be affected either adversely or for the better by national policies and initiatives. National policies to enable financially stable arrangements when partners wish to retire or sell their share in the business may also benefit GP retention.

At the practice level, larger practices appear to have more scope to offer flexible or part-time working, or simply be a more supportive working environment. Such part-time or flexible working in the short-term might enable many GPs to retire later than they otherwise would have. However, there was some evidence that very large practices may not sustain such flexibility and support. Conversely, in one study small practices (not quantitatively defined) also seemed to have higher proportions of GPs intending to quit, and there may be specific reasons for this (e.g. scope for clinical team-working and mutual support, or the relative burden of clinical to administrative work). A significant minority of GPs also cited

practice partnership relationship problems as a key factor leading some to quit patient care entirely. So more consistent 'HR-style' workplace wellbeing support for GPs, as well as direct support to reduce workload demands and the administration burden may be a part of the solution. However, financial incentives in the form of additional salary, if purely to encourage GPs to stay were reported to be unlikely to help, and might even increase opportunities to leave.

References

BAKER, M. 2000. *The work commitments of general practitioners: a study of 1986, 1991 and 1996 cohort JCPTGP qualifiers,* Nottingham, University of Nottingham Division of General Practice.

BAKER, M., WILLIAMS, J. & PETCHEY, R. 1995. GPs in principle but not in practice: a study of vocationally trained doctors not currently working as principals. *BMJ,* 310**,** 1301-4.

BRETT, T. D., ARNOLD-REED, D. E., HINCE, D. A., WOOD, I. K. & MOORHEAD, R. G. 2009. Retirement intentions of general practitioners aged 45-65 years.[Erratum appears in Med J Aust. 2009 Sep 7;191(5):296]. *Medical Journal of Australia,* 191**,** 75-7.

CAMPBELL, J., CALITRI, R. & SANSOM, A. 2015. Retaining the experienced GP workforce in Direct Patient Care (ReGROUP) - Final Report for the South West AHSN. Exeter.

CHAMBERS, M., COLTHART, I. & MCKINSTRY, B. 2004. Scottish general practitioners' willingness to take part in a post-retirement retention scheme: questionnaire survey. *British Medical Journal,* 328**,** 329.

DALE, J., POTTER, R., OWEN, K., PARSONS, N., REALPE, A. & LEACH, J. 2015. Retaining the general practitioner workforce in England: what matters to GPs? A cross-sectional study. *BMC Family Practice,* 16**,** 140.

DEWA, C. S., JACOBS, P., THANH, N. X. & LOONG, D. 2014. An estimate of the cost of burnout on early retirement and reduction in clinical hours of practicing physicians in Canada. *BMC Health Services Research,* 14**,** 254.

DORAN, N., FOX, F., RODHAM, K., TAYLOR, G. & HARRIS, M. 2016. Lost to the NHS: a mixed methods study of why GPs leave practice early in England. *British Journal of General Practice,* 66**,** e128-35.

DORAN, N., FOX, F., TAYLOR, G. & HARRIS, M. 2015. Early GP Leavers Interim Report: Report to HEE & NHS England. Bath: University of Bath.

DWAN, K. M., DOUGLAS, K. A. & FORREST, L. E. 2014. Are "part-time" general practitioners workforce idlers or committed professionals? *BMC Family Practice,* 15**,** 154.

EVANS, J., LAMBERT, T. & GOLDACRE, M. 2002. GP recruitment and retention: a qualitative analysis of doctors' comments about training for and working in general practice. *Occasional Paper - Royal College of General Practitioners*, iii-vi, 1-33.

FRENCH, F. 2005. General practitioner non-principals benefit from flexible working.

FRENCH, F. 2006. Why do work patterns differ between men and women GPs?

GIBSON, J., CHECKLAND, K., COLEMAN, A., HANN, M., MCCALL, R., SPOONER, S. & SUTTON, M. 2015. Eighth National GP Worklife Survey UK.

GREGORY, S. T. & MENSER, T. 2015. Burnout Among Primary Care Physicians: A Test of the Areas of Worklife Model. *Journal of Healthcare Management,* 60**,** 133-48.

HANN, M., REEVES, D. & SIBBALD, B. 2011. Relationships between job satisfaction, intentions to leave family practice and actually leaving among family physicians in England. *European Journal of Public Health,* 21**,** 499-503.

HUTCHINS, A. 2005a. Influences on GPs' early retirement, and how to keep them. *British Journal of Health Care Management,* 11**,** 367-371.

HUTCHINS, A. 2005b. An investigation into the benefits of prolonged study leave undertaken by general practitioners.

IPSOS MORI 2015. Looking to the future: the recruitment, retention and return of GPs (Summary and next steps report for NHS England). London: Ipsos MORI Social Research Institute.

LUCE, A., VAN ZWANENBERG, T., FIRTH-COZENS, J. & TINWELL, C. 2002. What might encourage later retirement among general practitioners? *Journal of Management in Medicine,* 16**,** 303-310.

MANAGEMENT, C. F. E.-B. 2016. *Critical Appraisal of a survey [appraisal form]* [Online]. Available: https://www.cebma.org/wp-content/uploads/Critical-Appraisal-Questions-for-a-Survey.pdf.

MARTIN, S., DAVIES, E. & GERSHLICK, B. 2016. Under pressure: What the Commonwealth Fund's 2015 international survey of general practitioners means for the UK. London: The Health Foundation.

MCCOMB, E. D. 2008. Which psycho-demographic factors predict a doctor's intention to leave New Zealand general practice? *New Zealand Medical Journal,* 121**,** 25-36.

MCKINSTRY, B., COLTHART, I., ELLIOTT, K. & HUNTER, C. 2006. The feminization of the medical work force, implications for Scottish primary care: A survey of Scottish general practitioners. *BMC Health Services Research,* 6.

NEWTON, J. 2004. Job dissatisfaction and early retirement : a qualitative study of general practitioners in the Northern Deanery.

NORMAN, R. & HALL, J. P. 2014. The desire and capability of Australian general practitioners to change their working hours. *Medical Journal of Australia,* 200**,** 399-402.

NUGENT, A., BLACK, N., PARSONS, B., SMITH, S. & MURPHY, A. W. 2003. A national census of Irish general practice training programme graduates 1990-1996. *Irish Medical Journal,* 96**,** 10-2.

O'KELLY, F., O'KELLY, M., NI SHUILLEABHAIN, A. & O'DOWD, T. 2008. A National Census of Irish General Practice Training Programme Graduates 1997-2003. Dublin: Department of Public Health and Primary Care, Trinity College Dublin.

PIT, S. & HANSEN, V. 2014. Factors influencing early retirement intentions in Australian rural general practitioners. *Occupational Medicine,* 64**,** 297-304.

ROYAL COLLEGE OF GENERAL PRACTITIONERS OF NEW ZEALAND 2015. RCGPNZ Workforce Survey.

SANSOM, A., CALITRI, R., CARTER, M. & CAMPBELL, J. 2016. Understanding quit decisions in primary care: a qualitative study of older GPs. *BMJ Open,* 6.

SCOTT, A., GRAVELLE, H., SIMOENS, S., BOJKE, C. & SIBBALD, B. 2006. Job satisfaction and quitting intentions: A structural model of British general practitioners. *British Journal of Industrial Relations,* 44**,** 519-540.

SHRESTHA, D. & JOYCE, C. M. 2011. Aspects of work-life balance of Australian general practitioners: determinants and possible consequences. *Australian Journal of Primary Health,* 17**,** 40-7.

SIBBALD, B., BOJKE, C. & GRAVELLE, H. 2003. National survey of job satisfaction and retirement intentions among general practitioners in England. *BMJ,* 326**,** 22.

SIMOENS, S. 2002. Job satisfaction, intentions to quit, and the retention of GPs in England and Scotland.

SIMOENS, S., SCOTT, A. & SIBBALD, B. 2002. Job satisfaction, work-related stress and intentions to quit of Scottish GPS. *Scottish Medical Journal,* 47**,** 80-6.

SUMANEN, M., AINE, T., HALILA, H., HEIKKILA, T., HYPPOLA, H., KUJALA, S., VANSKA, J., VIRJO, I. & MATTILA, K. 2012. Where have all the GPs gone--where will they go? Study of Finnish GPs. *BMC Family Practice,* 13**,** 121.

TAYLOR, D. H., QUAYLE, J. A. & ROBERTS, C. 1999. Retention of young general practitioners entering the NHS from 1991-1992. *British Journal of General Practice,* 49**,** 277-280.

TAYLOR, K., LAMBERT, T. & GOLDACRE, M. 2008. Future career plans of a cohort of senior doctors working in the National Health Service. *Journal of the Royal Society of Medicine,* 101**,** 182-190.

THOMAS, J. & HARDEN, A. 2008. Methods for the thematic synthesis of qualitative research in systematic reviews. *BMC Medical Research Methodology,* 8.

VAN GREUNINGEN, M., HEILIGERS, P. J. & VAN DER VELDEN, L. F. 2012. Motives for early retirement of self-employed GPs in the Netherlands: a comparison of two time periods. *BMC Health Services Research,* 12**,** 467.

WALLACE, A., CROUCHER, K., QUILGARS, D. & BALDWIN, S. 2004. Meeting the challenge: developing systematic reviewing in social policy. *Policy & Politics,* 32**,** 455-470.

WOODWARD, C. A., FERRIER, B., COHEN, M. & BROWN, J. 2001. Professional activity. How is family physicians' work time changing? *Canadian Family Physician,* 47**,** 1414-21.

YOUNG, R., LEESE, B. & SIBBALD, B. 2001. Imbalances in the GP labour market in the UK: Evidence from a postal survey and interviews with GP leavers. *Work, Employment and Society,* 15**,** 699-719.

Appendix A – Literature search strategies

Database: MEDLINE
Host: Ovid
Data Parameters: 1946 to January Week 3 2016
Date Searched: 29/01/2016
Searcher: SR
Hits: 3655
Strategy:
1. Family Practice/ or General Practice/
2. physicians, family/ or physicians, primary care/
3. General Practitioners/
4. Primary Health Care/
5. "primary care".tw.
6. "general practi$".tw.
7. "family doctor$".tw.
8. "family physician$".tw.
9. "family medic$".tw.
10. (GP or GPs).tw.
11. or/1-10
12. (career$ adj3 (interrupt$ or chang$ or pattern$ or decision$ or leav$ or break$)).tw.
13. (retire$ adj3 (decision$ or medical$ or option$ or choice$ or pattern$ or determin$)).tw.
14. (job$ adj3 (chang$ or leav$)).tw.
15. (work$ adj3 (retention or retain$)).tw.
16. (long adj3 (sick$ or absen$ or ill$)).tw.
17. (burnout or "burn out").tw.
18. Job Satisfaction/
19. Personnel Turnover/
20. Career Choice/
21. Retirement/
22. or/12-21
23. 11 and 22
24. limit 23 to yr="1990 -Current"

Database: MEDLINE(R) In-Process & Other Non-Indexed Citations
Host: Ovid
Data Parameters: 28 January 2016
Date Searched: 28/01/2016
Searcher: SR
Hits: 87
Strategy:
1. "primary care".tw.
2. "general practi$".tw.
3. "family doctor$".tw.
4. "family physician$".tw.

5. "family medic$".tw.
6. (GP or GPs).tw.
7. or/1-6
8. (career$ adj3 (interrupt$ or chang$ or pattern$ or decision$ or leav$ or break$)).tw.
9. (retire$ adj3 (decision$ or medical$ or option$ or choice$ or pattern$ or determin$)).tw.
10. (job$ adj3 (chang$ or leav$)).tw.
11. (work$ adj3 (retention or retain$)).tw.
12. (long adj3 (sick$ or absen$ or ill$)).tw.
13. (burnout or "burn out").tw.
14. or/8-13
15. 7 and 14

Database: PsycINFO

Host: Ovid
Data Parameters: 1806 to January Week 4 2016
Date Searched: 29/01/2016
Searcher: SR
Hits: 511
Strategy:
1. family medicine/
2. family physicians/
3. general practitioners/
4. primary health care/
5. "primary care".tw.
6. "general practi$".tw.
7. "family doctor$".tw.
8. "family physician$".tw.
9. "family medic$".tw.
10. (GP or GPs).tw.
11. or/1-10
12. (career$ adj3 (interrupt$ or chang$ or pattern$ or decision$ or leav$ or break$)).tw.
13. (retire$ adj3 (decision$ or medical$ or option$ or choice$ or pattern$ or determin$)).tw.
14. (job$ adj3 (chang$ or leav$)).tw.
15. (work$ adj3 (retention or retain$)).tw.
16. (long adj3 (sick$ or absen$ or ill$)).tw.
17. (burnout or "burn out").tw.
18. job satisfaction/
19. employee turnover/
20. occupational choice/
21. retirement/
22. or/12-21
23. 11 and 22
24. limit 23 to yr="1990 -Current"

Database: HMIC (Health Management Information Consortium)

Host: Ovid
Data Parameters: 1979 to November 2015
Date Searched:
Searcher: SR
Hits: 417
Strategy:
1. exp general practice/
2. exp general practitioners/
3. primary care/
4. "primary care".tw.
5. "general practi$".tw.
6. "family doctor$".tw.
7. "family physician$".tw.
8. "family medic$".tw.
9. (GP or GPs).tw.
10. or/1-9
11. (career$ adj3 (interrupt$ or chang$ or pattern$ or decision$ or leav$ or break$)).tw.
12. (retire$ adj3 (decision$ or medical$ or option$ or choice$ or pattern$ or determin$)).tw.
13. (job$ adj3 (chang$ or leav$)).tw.
14. (work$ adj3 (retention or retain$)).tw.
15. (long adj3 (sick$ or absen$ or ill$)).tw.
16. (burnout or "burn out").tw.
17. job satisfaction/
18. occupational choice/
19. exp retirement/
20. or/11-19
21. 10 and 20
22. limit 21 to yr="1990 -Current"

Database: ASSIA

Host: ProQuest
Data Parameters: n/a
Date Searched: 29/01/2016
Searcher: SR
Hits: 214
Strategy:

1. TI,AB("primary care" OR "general practi*" OR "family doctor*" OR "family physician*" OR "family medic*" OR GP OR GPs) OR SU.EXACT("General practice" OR "General practitioners" OR "Primary health care")
2. TI,AB((career* NEAR/2 (interrupt* OR chang* OR pattern* OR decision* OR leav* OR break*)) OR (retire* NEAR/2 (decision* OR medical* OR option* OR choice* OR pattern* OR determin*)) OR (job* NEAR/2 (chang* OR leav*)) OR (work* NEAR/2 (retention OR retain*)) OR (long NEAR/2 (sick* OR absen* OR ill*) OR (burnout OR "burn out"))) OR SU.EXACT(("Job satisfaction") OR

("Career choice")) OR SU.EXACT.EXPLODE("Early retirement" OR "Mandatory retirement" OR "Retirement")

3. 1 AND 2

Database: Cochrane

Host: Cochrane Collaboration
Data Parameters: CENTRAL: Issue 12 of 12, December 2015; CDSR: Issue 1 of 12, January 2016
Date Searched: 29/01/2016
Searcher: SR
Hits: 75
Strategy:

1 MeSH descriptor: [General Practice] this term only
2 MeSH descriptor: [Family Practice] this term only
3 MeSH descriptor: [Physicians, Family] this term only
4 MeSH descriptor: [Physicians, Primary Care] this term only
5 MeSH descriptor: [General Practitioners] this term only
6 MeSH descriptor: [Primary Health Care] this term only
7 "primary care":ti or "primary care":ab
8 "general practi*":ti or "general practi*":ab
9 "family doctor*":ti or "family doctor*":ab
10 "family physician*":ti or "family physician*":ab
11 "family medic*":ti or "family medic*":ab
12 (GP or GPs):ti or (GP or GPs):ab
13 (Gregory and Menser-#12)
14 (career* near/3 (interrupt* or chang* or pattern* or decision* or leav* or break*)):ti
15 (career* near/3 (interrupt* or chang* or pattern* or decision* or leav* or break*)):ab
16 (retire* near/3 (decision* or medical* or option* or choice* or pattern* or determin*)):ti
17 (retire* near/3 (decision* or medical* or option* or choice* or pattern* or determin*)):ab
18 (job* near/3 (chang* or leav*)):ti
19 (job* near/3 (chang* or leav*)):ab
20 work* near/3 (retention or retain*):ti
21 work* near/3 (retention or retain*):ab
22 long near/3 (sick* or absen* or ill*):ti
23 long near/3 (sick* or absen* or ill*):ab
24 (burnout or "burn out"):ti
25 (burnout or "burn out"):ab
26 MeSH descriptor: [Job Satisfaction] this term only
27 MeSH descriptor: [Personnel Turnover] this term only
28 MeSH descriptor: [Career Choice] this term only
29 MeSH descriptor: [Retirement] this term only
30 {or #14-#29}
31 #13 and #30

Database: Web of Science
Host: Thomson Reuters
Data Parameters: SCI-EXPANDED and SSCI
Date Searched: 29/01/2016
Searcher: SR
Hits: 1702
Strategy:

1. **TOPIC:** (family (practic* or doctor* or physician* or medic*))
2. **TOPIC:** ("general practi*")
3. **TOPIC:** ("primary care")
4. **TOPIC:** (GP or GPs)
5. 1 OR 2 OR 3 OR 4
6. **TOPIC:** (career near/2 (interrupt* or chang* or pattern* or decision* or leav* or break*))
7. **TOPIC:** (retire* near/2 (decision* or medical* or option* or choice* or pattern* or determin*))
8. **TOPIC:** (job* near/2 (chang* or leav*))
9. **TOPIC:** (work* near/2 (retention or retain*))
10. **TOPIC:** (long near/2 (sick* or absen* or ill*))
11. **TOPIC:** ((burnout or "burn out"))
12. **6 OR 7 OR 8 OR 9 OR 10 OR 11**
13. 5 AND 12
14. Limit to 1990-

Database	**Hits**
MEDLINE	3655
MEDLINE-in-process	87
ASSIA	214
PsycINFO	511
HMIC	417
Cochrane	75
Web of Science	1702
Total	**6661**
Duplicates	1434
Total unique references	**5227**

Appendix B – List of high-income OECD countries

Australia
Austria
Belgium
Canada
Chile
Czech Republic
Denmark
Estonia
Finland
France
Germany
Greece
Hungary
Iceland
Ireland
Israel
Italy
Japan
Korea, Rep.
Luxembourg
Netherlands
New Zealand
Norway
Poland
Portugal
Slovak Republic
Slovenia
Spain
Sweden
Switzerland
United Kingdom
United States

Appendix C – List of full text exclusions, with reasons

	Paper	Reason for exclusion
1	Aseltine RH, Jr., Katz MC. Connecticut physician workforce survey 2008: initial findings on physician perceptions and potential impact on access to medical care. Conn Med. 2008;72(9):539-46.	Not clear whether are GPs/PCPs. No examination of factors/associations with/determinants of quitting/intention to quit profession.
2	Aseltine RH, Jr., Katz MC, Geragosian AH. Connecticut physician workforce survey 2009: physician satisfaction, physician supply and patient access to medical care. Conn Med. 2010;74(5):281-91.	No examination of factors/associations with/determinants of quitting/intention to quit profession.
3	Ashworth M., Armstrong D. Sources and implications of dissatisfaction among new GPs in the inner city. Family Practice 1999;16(1):18-22.	No examination of factors/associations with/determinants of quitting/intention to quit profession. Career decisions and progression.
4	Barnett RC, Gareis KC, Carr PL. Career satisfaction and retention of a sample of women physicians who work reduced hours. Journal of Womens Health. 2005;14(2):146-53.	Not clear whether are GPs/PCPs.
5	Beasley JW, Karsh BT, Sainfort F, Hagenauer ME, Marchand L. Quality of work life of family physicians in Wisconsin's health care organizations: a WReN study. Wisconsin Med Jnl. 2004;103(7):51-5.	No examination of factors/associations with/determinants of quitting/intention to quit profession. Turnover between different employers.
6	Beasley JW, Karsh BT, Hagenauer ME, Marchand L, Sainfort F. Quality of work life of independent vs employed family physicians in Wisconsin: a WreN study. Ann Fam Med. 2005;3(6):500-6.	No examination of factors/associations with/determinants of quitting/intention to quit profession. Turnover between different employers.
7	British Medical Association. National survey of GPs: the future of General Practice 2015. BMA. 2015.	No examination of factors/associations with/determinants of quitting/intention to quit profession.
8	Buchbinder SB, Wilson M, Melick CF, Powe NR. Primary care physician job satisfaction and turnover. Am J Manag Care. 2001;7(7):701-13.	<90% are GPs/PCPs and results for GPs not reported separately. No examination of factors/associations with/determinants of quitting/intention to quit profession. Turnover between different employers.
9	Buddeberg-Fischer B, Stamm M, Buddeberg C, Bauer G, Haemmig O, Knecht M, et al. The	<90% are GPs/PCPs and results for GPs

	impact of gender and parenthood on physicians' careers - professional and personal situation seven years after graduation. BMC Health Serv Res. 2010;10:10.	not reported separately. No examination of factors/associations with/determinants of quitting/intention to quit profession.
10	Calitri R, Adams A, Atherton H, Reeve J, Hill NR. Investigating the sustainability of careers in academic primary care: a UK survey. BMC Fam Pract. 2014;15:205.	Not clear whether are GPs/PCPs. No examination of factors/associations with/determinants of quitting/intention to quit profession.
11	Cameron R, Redman S, Burrow S, Young B. Comparison of career patterns of male and female graduates of one Australian medical school. Teaching and Learning in Medicine. 1995;7(4):218-24.	<90% are GPs/PCPs and results for GPs not reported separately. No examination of factors/associations with/determinants of quitting/intention to quit profession. Career decisions and progression.
12	Carr PL, Gareis KC, Barnett RC. Characteristics and outcomes for women physicians who work reduced hours. Journal of Womens Health & Gender-Based Medicine. 2003;12(4):399-405.	Not clear whether are GPs/PCPs. No examination of factors/associations with/determinants of quitting/intention to quit profession.
13	Cheraghi-Sohi S, McDonald R, Harrison S, Sanders C. Experience of contractual change in UK general practice: a qualitative study of salaried GPs. British Journal of General Practice. 2012;62(597):e282-7.	No examination of factors/associations with/determinants of quitting/intention to quit profession.
14	Commonwealth Fund. Primary care providers' views of recent trends in health care delivery and payment: findings from the Commonwealth Fund/Kaiser Family Foundation 2015 national survey of primary care providers. Issue Brief. 2015;24.	<90% are GPs/PCPs and results for GPs not reported separately.
15	Cossman JS. Mississippi's physician labor force: current status and future challenges. J Miss State Med Assoc. 2004;45(1):8-31.	Not clear whether are GPs/PCPs. No examination of factors/associations with/determinants of quitting/intention to quit profession.
16	Crouse BJ. Recruitment and retention of family physicians. Minn Med. 1995;78(10):29-32.	Uses pre-1990 data (from 1982 and 1984).
17	Davidson JM, Lambert TW, Parkhouse J, Evans J, Goldacre MJ. Retirement intentions of doctors who qualified in the United Kingdom in 1974: Postal questionnaire	Not clear whether are GPs/PCPs.

	survey. Journal of Public Health Medicine. 2001;23(4):323-8.	
18	Degen C, Li J, Angerer P. Physicians' intention to leave direct patient care: An integrative review. Human Resources for Health. 2015;13(1).	Not clear whether are GPs/PCPs.
19	DesRoches CM, Buerhaus P, Dittus RS, Donelan K. Primary care workforce shortages and career recommendations from practicing clinicians. Acad Med. 2015;90(5):671-7.	No examination of factors/associations with/determinants of quitting/intention to quit profession. Career decisions.
20	Dewa CS, Loong D, Bonato S, Thanh NX, Jacobs P. How does burnout affect physician productivity? A systematic literature review. BMC Health Services Research. 2014;14(1).	Not clear whether are GPs/PCPs. Burnout but not associated with absence from work.
21	Dowell AC, Hamilton S, McLeod DK. Job satisfaction, psychological morbidity and job stress among New Zealand general practitioners. N Z Med J. 2000;113(1113):269-72.	No examination of factors/associations with/determinants of quitting/intention to quit profession.
22	Farber NJ, Bryson C, Collier VU, Weiner JL, Boyer EG. Work enjoyment, intention to discontinue practice, and burnout in primary care physicians. J Gen Intern Med. 2003;18(Supplement 1):240.	Conference abstract only.
23	Gregory ST, Menser T. Burnout Among Primary Care Physicians: A Test of the Areas of Worklife Model. J Healthc Manag. 2015;60(2):133-48.	No examination of factors/associations with/determinants of quitting/intention to quit profession. Burnout but not associated with absence from work.
24	Hall CB, Brazil K, Wakefield D, Lerer T, Tennen H. Organizational culture, job satisfaction, and clinician turnover in primary care. J. 2010;1(1):29-36.	No examination of factors/associations with/determinants of quitting/intention to quit profession. Turnover between different employers.
25	Heponiemi T, Kouvonen A, Vänskä J, Halila H, Sinervo T, Kivimäki M, et al. Health, psychosocial factors and retirement intentions among Finnish physicians. Occupational Medicine. 2008;58(6):406-12.	Not clear whether are GPs/PCPs.
26	Heponiemi T, Kouvonen A, Vanska J, Halila H, Sinervo T, Kivimaki M, et al. Effects of active on-call hours on physicians' turnover	<90% are GPs/PCPs and results for GPs not reported separately. No examination of factors/associations

	intentions and well-being. Scandinavian Journal of Work Environment & Health. 2008;34(5):356-63.	with/determinants of quitting/intention to quit profession. Turnover between different employers.
27	Heponiemi T, Kouvonen A, Vänskä J, Halila H, Sinervo T, Kivimäki M, et al. The Association of Distress and Sleeping Problems With Physicians' Intentions To Change Profession: The Moderating Effect of Job Control. Journal of Occupational Health Psychology. 2009;14(4):365-73.	Not clear whether are GPs/PCPs.
28	Heponiemi T, Kouvonen A, Aalto AM, Elovainio M. Psychosocial factors in GP work: the effects of taking a GP position or leaving GP work. Eur J Public Health. 2013;23(3):361-6.	Employment change either *from* or *to* general practice. Turnover between different employers.
29	Heponiemi T, Manderbacka K, Vanska J, Elovainio M. Can organizational justice help the retention of general practitioners? Health Policy. 2013;110(1):22-8.	No examination of factors/associations with/determinants of quitting/intention to quit profession. Turnover between different employers.
30	Heponiemi T, Elovainio M, Presseau J, Eccles MP. General practitioners' psychosocial resources, distress, and sickness absence: a study comparing the UK and Finland. Family Practice. 2014;31(3):319-24.	No examination of factors/associations with/determinants of quitting/intention to quit profession. *All* sickness absence included, not necessarily long-term sickness absence.
31	Hockly A. Could health service reforms make general practitioners ill? Journal of Public Mental Health. 2012;11(2):50-3.	<90% are GPs/PCPs and results for GPs not reported separately. No examination of factors/associations with/determinants of quitting/intention to quit profession.
32	Hojat M, Gonnella JS, Erdmann JB, Veloski JJ, Xu G. Primary care and non-primary care physicians: a longitudinal study of their similarities, differences, and correlates before, during, and after medical school. Acad Med. 1995;70(1 Suppl):S17-28.	No examination of factors/associations with/determinants of quitting/intention to quit profession. Career decisions.
33	Hung DY, Rundall TG, Cohen DJ, Tallia AF, Crabtree BF. Productivity and turnover in PCPs: the role of staff participation in decision-making. Med Care. 2006;44(10):946-51.	<90% are GPs/PCPs and results for GPs not reported separately. No examination of factors/associations with/determinants of quitting/intention to quit profession. Turnover between different employers.

34	Jamieson JL, Webber EM, Sivertz KS. Re-entry residency training: opportunities and obstacles. Can Fam Physician. 2010;56(6):e226-32.	Career decisions and progression. Retraining programmes to change speciality and/or retraining as a GP. Balance of focus unclear.
35	Jewett EA, Brotherton SE, Ruch-Ross H. A national survey of 'inactive' physicians in the United States of America: enticements to reentry. Hum Resour Health. 2011;9:7.	<90% are GPs/PCPs and results for GPs not reported separately.
36	Johnson N. General practice careers: changing experience of men and women vocational trainees between 1974 and 1989. British Journal of General Practice. 1993;43(369):141-5.	No examination of factors/associations with/determinants of quitting/intention to quit profession.
37	Jones L, Fisher T. Workforce trends in general practice in the UK: results from a longitudinal study of doctors' careers. British Journal of General Practice. 2006;56(523):134-6.	No examination of factors/associations with/determinants of quitting/intention to quit profession. Career decisions and progression.
38	Joyce CM, Scott A, Jeon SH, Humphreys J, Kalb G, Witt J, et al. The "medicine in Australia: balancing employment and life (MABEL)" longitudinal survey--protocol and baseline data for a prospective cohort study of Australian doctors' workforce participation. BMC Health Serv Res. 2010;10:50.	No examination of factors/associations with/determinants of quitting/intention to quit profession.
39	Joyce CM, Wang WC, McDonald HM. Retirement patterns of Australian doctors aged 65 years and older. Australian Health Review. 2015;39(5):582-7.	<90% are GPs/PCPs and results for GPs not reported separately.
40	Karsh BT, Beasley JW, Brown RL. Employed family physician satisfaction and commitment to their practice, work group, and health care organization. Health Serv Res. 2010;45(2):457-75.	No examination of factors/associations with/determinants of quitting/intention to quit profession.
41	Kelley ML, Kuluski K, Brownlee K, Snow S. Physician satisfaction and practice intentions in Northwestern Ontario. Can J Rural Med. 2008;13(3):129-35.	Not clear whether are GPs/PCPs. Focus on remote rural retention.
42	Kerstein J, Pauly MV, Hillman A. Primary care physician turnover in HMOs. Health Serv Res. 1994;29(1):17-37.	No examination of factors/associations with/determinants of quitting/intention to quit profession.

		Turnover between different employers.
43	Kilmartin MR, Newell CJ, Line MA. The balancing act: key issues in the lives of women general practitioners in Australia. Med J Aust. 2002;177(2):87-9.	No examination of factors/associations with/determinants of quitting/intention to quit profession.
44	Kirwan M, Armstrong D. Investigation of burnout in a sample of British general practitioners. British Journal of General Practice. 1995;45(394):259-60.	No examination of factors/associations with/determinants of quitting/intention to quit profession. Burnout but not associated with absence from work.
45	Kuusio H, Heponiemi T, Sinervo T, Elovainio M. Organizational commitment among general practitioners: a cross-sectional study of the role of psychosocial factors. Scand J Prim Health Care. 2010;28(2):108-14.	No examination of factors/associations with/determinants of quitting/intention to quit profession. Turnover between different employers.
46	Kuusio H, Heponiemi T, Vanska J, Aalto AM, Ruskoaho J, Elovainio M. Psychosocial stress factors and intention to leave job: differences between foreign-born and Finnish-born general practitioners. Scand J Public Health. 2013;41(4):405-11.	No examination of factors/associations with/determinants of quitting/intention to quit profession. Turnover between different employers.
47	Langballe EM, Innstrand ST, Aasland OG, Falkum E. The Predictive Value of Individual Factors, Work-Related Factors, and Work-Home Interaction on Burnout in Female and Male Physicians: A Longitudinal Study. Stress and Health. 2011;27(1):73-87.	Not clear whether are GPs/PCPs. No examination of factors/associations with/determinants of quitting/intention to quit profession. Burnout but not associated with absence from work.
48	Lawrence J, Poole P. Career and life experiences of New Zealand women medical graduates. N Z Med J. 2001;114(1145):537-40.	<90% are GPs/PCPs and results for GPs not reported separately. Career decisions and progression.
49	Leese B, Young R, Sibbald B. GP principals leaving practice in the UK. European Jnl Gen Practice. 2002;8(2):62-8.	No examination of factors/associations with/determinants of quitting/intention to quit profession. Examines leaving GP principal job for another GP job, factors for returning.
50	Linzer M, Manwell LB, Williams ES, Bobula JA, Brown RL, Varkey AB, et al. Working conditions in primary care: physician reactions and care quality. Ann Intern Med.	<90% are GPs/PCPs and results for GPs not reported separately. No examination of factors/associations with/determinants of quitting/intention

	2009;151(1):28-36, W6-9.	to quit profession.
51	Lloyd JR, Leese B. Career intentions and preferences of GP registrars in Yorkshire. Br J GP. April 2006:280-2.	No examination of factors/associations with/determinants of quitting/intention to quit profession. Career decisions and progression.
52	Landon BE, Reschovsky JD, Pham HH, Blumenthal D. Leaving medicine: the consequences of physician dissatisfaction. Med Care. 2006;44(3):234-42.	<90% are GPs/PCPs and results for GPs not reported separately.
53	Lorant V, Geerts C, Duchesnes C, Goedhuys J, Ryssaert L, Remmen R, et al. Attracting and retaining GPs: a stakeholder survey of priorities. British Journal of General Practice. 2011;61(588):e411-8.	<90% are GPs/PCPs and results for GPs not reported separately. No examination of factors/associations with/determinants of quitting/intention to quit profession. Retention and recruitment.
54	Mayorova T, Stevens F, Scherpbier A, van der Velden L, van der Zee J. Gender-related differences in general practice preferences: longitudinal evidence from the Netherlands 1982-2001. Health Policy. 2005;72(1):73-80.	No examination of factors/associations with/determinants of quitting/intention to quit profession. Career decisions.
55	Misra-Hebert AD, Kay R, Stoller JK. A review of physician turnover: Rates, causes, and consequences. American Journal of Medical Quality. 2004;19(2):56-66.	Not clear whether are GPs/PCPs. No examination of factors/associations with/determinants of quitting/intention to quit profession. Turnover between different employers.
56	Miedema B, Easley J, Fortin P, Hamilton R, Tatemichi S. Crossing boundaries: family physicians' struggles to protect their private lives. Can Fam Physician. 2009;55(3):286-7.e5.	No examination of factors/associations with/determinants of quitting/intention to quit profession.
57	Miedema B, Hamilton R, Fortin P, Easley J, Tatemichi S. The challenges and rewards of rural family practice in New Brunswick, Canada: lessons for retention. Rural Remote Health. 2009;9(2):1141.	No examination of factors/associations with/determinants of quitting/intention to quit profession. Focus on remote rural retention.
58	Moreno-Jiménez B, Gálvez-Herrer M, Rodríguez-Carvajal R, Vergel AIS. A study of physicians' intention to quit: The role of burnout, commitment and difficult doctor-patient interactions. Psicothema. 2012;24(2):263-70.	Not clear whether are GPs/PCPs.

59	Myhre DL, Konkin J, Woloschuk W, Szafran O, Hansen C, Crutcher R. Locum practice by recent family medicine graduates. Can Fam Physician. 2010;56(5):e183-90.	No examination of factors/associations with/determinants of quitting/intention to quit profession. Turnover between different employers.
60	Odom Walker K, Ryan G, Ramey R, Nunez FL, Beltran R, Splawn RG, et al. Recruiting and retaining primary care physicians in urban underserved communities: the importance of having a mission to serve. Am J Public Health. 2010;100(11):2168-75.	<90% are GPs/PCPs and results for GPs not reported separately. No examination of factors/associations with/determinants of quitting/intention to quit profession. Career decisions and progression.
61	Pathman DE, Konrad TR, Williams ES, Scheckler WE, Linzer M, Douglas J, et al. Physician job satisfaction, dissatisfaction, and turnover. J. Fam Practice. 2002;51(7):593.	Not clear whether are GPs/PCPs. Turnover between different employers.
62	Pedersen AF, Andersen CM, Olesen F, Vedsted P. Risk of Burnout in Danish GPs and Exploration of Factors Associated with Development of Burnout: A Two-Wave Panel Study. Int Jnl Fam Med. 2013;2013:603713.	No examination of factors/associations with/determinants of quitting/intention to quit profession. Burnout but not associated with absence from work.
63	Plomondon ME, Magid DJ, Steiner JF, MaWhinney S, Gifford BD, Shih SC, et al. Primary care provider turnover and quality in managed care organizations. Am J Manag Care. 2007;13(8):465-72.	Not clear whether are GPs/PCPs. No examination of factors/associations with/determinants of quitting/intention to quit profession. Turnover between different employers.
64	Presseau J, Johnston M, Johnston DW, Elovainio M, Hrisos S, Steen N, et al. Environmental and individual correlates of distress: Testing Karasek's Demand-Control model in 99 primary care clinical environments. British Journal of Health Psychology. 2014;19(2):292-310.	<90% are GPs/PCPs and results for GPs not reported separately.
65	Putnik K, Houkes I. Work related characteristics, work-home and home-work interference and burnout among primary healthcare physicians: a gender perspective in a Serbian context. BMC Public Health. 2011;11:716.	No examination of factors/associations with/determinants of quitting/intention to quit Burnout but not associated with absence from work.
66	Qidwai W, Beasley JW, Gomez-Clavelina FJ. The present status and future role of family doctors : a perspective from the	No examination of factors/associations with/determinants of quitting/intention to quit profession.

	International Federation of Primary Care Research Networks. 2008.	
67	Rabatin J, Williams E, Baier Manwell L, Schwartz MD, Brown RL, Linzer M. Predictors and Outcomes of Burnout in Primary Care Physicians. J Primary Care Community Health. 2016;7(1):41-3.	No examination of factors/associations with/determinants of quitting/intention to quit profession. Burnout but not associated with absence from work.
68	Rittenhouse DR, Mertz E, Keane D, Grumbach K. No exit: An evaluation of measures of physician attrition. Health Services Research. 2004;39(5):1571-88.	Not clear whether are GPs/PCPs.
69	Ruhe M, Gotler RS, Goodwin MA, Stange KC. Physician and staff turnover in community primary care practice. J Ambulatory Care Manage. 2004;27(3):242-8.	No examination of factors/associations with/determinants of quitting/intention to quit profession. Turnover between different employers.
70	Savageau JA, Ferguson WJ, Bohlke JL, Cragin LJ, O'Connell E. Recruitment and retention of primary care physicians at community health centers: a survey of Massachusetts physicians. J Health Care Poor Underserved. 2011;22(3):817-35.	<90% are GPs/PCPs and results for GPs not reported separately. No examination of factors/associations with/determinants of quitting/intention to quit profession. Turnover between different employers.
71	Schattner PL, Coman GJ. The stress of metropolitan general practice. Med J Aust. 1998;169(3):133-7.	No examination of factors/associations with/determinants of quitting/intention to quit profession.
72	Schofield DJ, Beard JR. Baby boomer doctors and nurses: demographic change and transitions to retirement. Med J Aust. 2005;183(2):80-3.	Not clear whether are GPs/PCPs. No examination of factors/associations with/determinants of quitting/intention to quit profession.
73	Schofield DJ, Fletcher SL, Callander EJ. Ageing medical workforce in Australia--where will the medical educators come from? Hum Resour Health. 2009;7:82.	No examination of factors/associations with/determinants of quitting/intention to quit profession. Workforce planning data.
74	Shaw S, Goplen G, Houston DS. Career changes among Saskatchewan physicians. Can Med Assoc Jnl. 1996;154(7):1035-8.	Not clear whether are GPs/PCPs. No examination of factors/associations with/determinants of quitting/intention to quit profession. Career decisions and progression.
75	Shorer Y, Biderman A, Rabin S, Karni A, Levi A, Matalon A. Voluntary departure of family physicians from their workplace: A reflective	Not clear whether each of four cases described involved leaving general practice. One is about returning to

	outlook. Israel Journal of Psychiatry and Related Sciences. 2015;52(2):137-44.	direct patient care. GP emotions around leaving examined not determinants for quitting.
76	Simon AB, Alonzo AA. The demography, career pattern, and motivation of locum tenens physicians in the United States. J Healthc Manag. 2004;49(6):363-75; discussion 75-6.	Not clear whether are GPs/PCPs. No examination of factors/associations with/determinants of quitting/intention to quit profession. Career decisions and progression.
77	Solberg IB, Ro KI, Aasland O, Gude T, Moum T, Vaglum P, et al. The impact of change in a doctor's job position: a five-year cohort study of job satisfaction among Norwegian doctors. BMC Health Serv Res. 2012;12:41.	<90% are GPs/PCPs and results for GPs not reported separately. No examination of factors/associations with/determinants of quitting/intention to quit profession. Career decisions and progression.
78	Solberg IB, Tómasson K, Aasland O, Tyssen R. The impact of economic factors on migration considerations among Icelandic specialist doctors: A cross-sectional study. BMC Health Services Research. 2013;13(1).	<90% are GPs/PCPs and results for GPs not reported separately. No examination of factors/associations with/determinants of quitting/intention to quit profession.
79	Soler JK, Yaman H, Esteva M, Dobbs F, Asenova RS, Katic M, et al. Burnout in European family doctors: the EGPRN study. Family Practice. 2008;25(4):245-65.	No examination of factors/associations with/determinants of quitting/intention to quit profession. Burnout but not associated with absence from work.
80	Statistical Bulletin. Statistics for general medical practitioners in England: 1994-2004. Department of Health Publications. 2005/02.	No examination of factors/associations with/determinants of quitting/intention to quit profession.
81	Stearns J, Everard KM, Gjerde CL, Stearns M, Shore W. Understanding the needs and concerns of senior faculty in academic medicine: building strategies to maintain this critical resource. Acad Med. 2013;88(12):1927-33.	Not clear whether are GPs/PCPs. Academic medicine.
82	Stevenson AD, Phillips CB, Anderson KJ. Resilience among doctors who work in challenging areas: a qualitative study. British Journal of General Practice. 2011;61(588):e404-10.	No examination of factors/associations with/determinants of quitting/intention to quit profession.
83	Taylor DH, Jr., Leese B. Recruitment, retention, and time commitment change of	No examination of factors/associations with/determinants of quitting/intention

	general practitioners in England and Wales, 1990-4: a retrospective study. BMJ. 1997;314(7097):1806-10.	to quit profession.
84	Taylor DH, Jr., Leese B. General practitioner turnover and migration in England 1990-94. British Journal of General Practice. 1998;48(428):1070-2.	No examination of factors/associations with/determinants of quitting/intention to quit profession. Turnover between different employers.
85	Taylor DH, Esmail A. Retrospective analysis of census data on general practitioners who qualified in South Asia: who will replace them as they retire? BMJ. 1999;318:306-10.	No examination of factors/associations with/determinants of quitting/intention to quit profession. Workforce planning.
86	Taylor K, Lambert T, Goldacre M. Future career plans of a cohort of senior doctors working in the National Health Service. Journal of the Royal Society of Medicine. 2008;101(4):182-90.	Not clear whether are GPs/PCPs. Career decisions and progression.
87	Taylor KS, Lambert TW, Goldacre MJ. Career progression and destinations, comparing men and women in the NHS: postal questionnaire surveys. BMJ. 2009;338:b1735.	No examination of factors/associations with/determinants of quitting/intention to quit profession. Career decisions and progression.
88	Taylor K, Lambert T, Goldacre M. Career destinations, views and future plans of the UK medical qualifiers of 1988. Journal of the Royal Society of Medicine. 2010;103(1):21-30.	<90% are GPs/PCPs and results for GPs not reported separately. No examination of factors/associations with/determinants of quitting/intention to quit profession. Career decisions and progression.
89	Thommasen HV, Lavanchy M, Connelly I, Berkowitz J, Grzybowski S. Mental health, job satisfaction, and intention to relocate. Opinions of physicians in rural British Columbia. Can Fam Physician. 2001;47:737-44.	Not clear whether are GPs/PCPs. Focus on remote rural retention. Burnout but not associated with absence from work.
90	Thornett A, Cobb S, Chambers R, Mohanna K. Accessing careers support in primary care. Education for Primary Care. 2005;16(1);66-73.	Not clear whether are GPs/PCPs. Career decisions and progression.
91	Toyry S, Kalimo R, Aarimaa M, Juntunen J, Seuril M, Rasanen K. Children and work-related stress among physicians. Stress and Health. 2004;20(4):213-21.	Not clear whether are GPs/PCPs. No examination of factors/associations with/determinants of quitting/intention to quit profession.

92	Virtanen P, Oksanen T, Kivimaki M, Virtanen M, Pentti J, Vahtera J. Work stress and health in primary health care physicians and hospital physicians. Occup Environ Med. 2008;65(5):364-6.	No examination of factors/associations with/determinants of quitting/intention to quit profession. Examines differences between GPs and consultants not factors leading to long term sickness.
93	Wainer J. Work of female rural doctors. Aust J Rural Health. 2004;12(2):49-53.	No examination of factors/associations with/determinants of quitting/intention to quit profession.
94	Wordsworth S, Skatun D, Scott A, French F. Preferences for general practice jobs: a survey of principals and sessional GPs. British Journal of General Practice. 2004;54(507):740-6.	No examination of factors/associations with/determinants of quitting/intention to quit profession. Career decisions and progression.
95	Xu G, Veloski JJ, Hojat M, Fields SK. Physicians' intention to stay in or leave primary care specialties and variables associated with such intention. Eval Health Prof. 1995;18(1):92-102.	<90% are GPs/PCPs and results for GPs not reported separately. No examination of factors/associations with/determinants of quitting/intention to quit profession.
96	Croft, M. (2016). "First 5's in Cornwall - what are their intentions and what influences their career choices?" (Unpubliushed)	Unpublished (Survey conducted by a GP Academic Trainee research project)

APPENDIX D – Quality assessment tools used

Table 15. Assessed quality of included qualitative interview studies (using Wallace tool)

	Newton 2004	Hutchins 2005	Campbell 2015	Sansom 2016	Doran 2016	Dwan 2014
1) Is the research question clear?	Y	Y	Y	Y	Y	Y
2) Is the theoretical or ideological perspective of the author (or funder) explicit?	N	N	N	N	N	Y
2b) Has this influenced the study design, methods or research findings?	CT	CT	CT	CT	CT	N
3) Is the study design appropriate to answer the question?	Y	Y	Y	Y	Y	Y
4) Is the context or setting adequately described?	N	N	Y	Y	Y	Y
5) Is the sample adequate to explore the range of subjects and settings, and has it been drawn from an appropriate population?	CT	Y	Y	Y	Y	Y
6) Was the data collection adequately described?	Y	N	Y	Y	Y	N
7) Was data collection rigorously conducted to ensure confidence in the findings?	CT	CT	Y	Y	Y	Y
8) Was there evidence that the data analysis was rigorously conducted to ensure confidence in the findings?	Y	Y	Y	Y	Y	Y
9) Are the findings substantiated by the data?	Y	Y	Y	Y	Y	Y
10) Has consideration been given to any limitations of the methods or data that may have affected the results?	N	Y	Y	Y	Y	Y
11) Do any claims to generalisability follow logically and theoretically from the data?	Y	N	Y	Y	Y	Y
12) Have ethical issues been addressed and confidentiality respected?	CT	Y	Y	Y	Y	Y
13) Is/are the author/s reflexive?	N	N	N	N	N	N

Key: Y = Yes, N = No, CT = can't tell. Questions are from tool originally published by Wallace et al (Wallace et al., 2004).

Table 16. Critical Appraisal of a Survey tool (adapted from CEBM tool)

Question	Yes	Partly	No	Can't tell	Notes & caveats
1. Did the study address a **clearly focused question / study aims**?					
2a. Is the **research method** (study design) **appropriate for answering the research question/aims**?					
2b. Was the **questionnaire piloted** prior to the main survey? (or previously validated/used)					
3. Is the **method of selection/eligibility criteria** of the subjects (GPs/Physicians) **clearly described**?					
4a. Could the **way the sample was obtained introduce (selection) bias**?					
4b. Was the sample size adequate for generalisability? (>500=Yes, <50=No)					
5. Was the sample of **subjects representative** with regard to the all GPs/PCPs in that region or country? (or specific sub-types of GP, or age etc.?)					
6. Was the **sample size** based on pre-study considerations of statistical power?					
7. Was a **satisfactory response rate** achieved? (>70%=Yes, <50%=No)					
8a. Were the **variables** (e.g. question(s)) **for capturing quitting/intention to quit** clearly described and likely to be valid and reliable?					
8b. Were the **variables** (e.g. question(s)) for **capturing potential determinants/factors** clearly described, comprehensive, valid and reliable?					
9. Was the **statistical significance** (of relevant associations) assessed?					
10. Are **confidence intervals** given for the main results?					
11. Could there be **confounding factors** that haven't been accounted for?					
12a. Generalisability: Can the results be confidently **applied to all GPs/primary care physicians in the source region and country**? (Combined judgement on Q5, Q7 and country/geography.)					
12b. Generalisability: Can the results be confidently **applied to all GPs in the UK NHS**? (12a +Sample size Q4b and time – how old is paper?)					

*Which in turn was adapted from Crombie, *The Pocket Guide to Critical Appraisal*; the critical appraisal approach used by the Oxford Centre for Evidence Medicine, checklists of the Dutch Cochrane Centre, BMJ editor's checklists and the checklists of the EPPI Centre. NB. Shading denotes negatively worded items.

APPENDIX E – Tables showing level of quitting and the main results/associations in each study

For each study the following tables show (i) the overall level of intention to quit direct patient care (e.g. early retirement intention or intention to reduce hours) and (ii) the potential factors explored in relation to that quitting construct.

Table 17. Factors associated with intention to quit fully from providing general practice care (UK studies)

1st author	Year	Determinants/associations assessed (verbatim)	Level of retirement intention/hours reduction planned in all respondents	Text describing the relevant results/associations (or retirement intentions etc. in subgroups)
Baker	2000	Gender, Age (10-year age bands), Principal/non-principal status, GP qualification cohort (1986, 1991, 1996).	64.1% would prefer to work fewer hours per week.	50.7% wanted to retire age 56-60 23.8% of women would like to retire 51-55 and 26.9% of men would like to retire 61-65 **Intended retirement age:** See table 24 p.31
Campbell	2015	age, gender, ethinic group, region graduated, position, practice deprivation, practice size, practice location	35% of GPs reported high risk of quitting direct patient care in next 5 years. 22% reported intention to take acreer break in next 5 years.	intention to quit increased with age, significantly more men than women inten ding to quit and more GP partners intending to quit.
Chambers	2004	NS (probably only open question about reasons for intention to retire early)	54 (81%) intendied to retire before age 60 + 170 (51%) intended to retire at 60 years old	Of those intending to retire before age 60, 55 (81%) "cited excessive workload as the reason"

1st author	Year	Determinants/associations assessed (verbatim)	Level of retirement intention/hours reduction planned in all respondents	Text describing the relevant results/associations (or retirement intentions etc. in subgroups)
Dale	2015	List of factors that might influence/reverse decision taken from recent media coverage and policy docs, plus free text comments. Workplace influences and individual motivators.	82% intend to leave GP work, take career break, reduce hours of work in next 5 years [41.9% intend to leave, 23.3% intend to take career break] 5,6% intend to increase hours	65.6% of men intend to leave within next 5 years; 64.3% of those aged 50-59 yrs intend to leave within 5 yrs, 84% of GP principals intend to leave within 5 yrs. Greatest work influence: intensity of workload, volume of workload, time on unimportant tasks, 7 day working week, job satisfaction. Greatest individual motivators: changes to pension taxes and age. Overall workload more important for GPs under 50 and for GP principals. Working conditions more important to men than women and less important with increasing age. Work-life flexibility less important with increasing age and more important for women, personal development more important for women, GPs with more than 10 years service, and GP principals. Table 2 p5 Table 3 on p9 has summary of GP attributes associated with principal components linked to intention to leave within 5 years
French	2005	inducement factors (implicitly, that would induce GPs "to consider working longer" - that is, beyond their planned retirement age.	Mean planned retirement age = 59 years (SD 5)	70% (49) of male GPs and 55% (121) of female GPs would consider working longer if they could do so on a part-time basis. From free text comments: other possible inducements to work longer were: financial need (30%), sufficient job satisfaction (19%), financial incentives (13%) and reduced/no on-call (4%)

1st author	Year	Determinants/associations assessed (verbatim)	Level of retirement intention/hours reduction planned in all respondents	Text describing the relevant results/associations (or retirement intentions etc. in subgroups)
French	2006	Warr-Cook-Wall job satisfaction scale (10 items) gender, whether spouse is doctor or not	Planned to retire at average 59 yrs. Where women and men worked comparable hours, differences in job satisfaction disappeared.	Women greater job satisfaction = worked fewer hours. Males would delay retirement (57% compared to 44% of women) if could work part-time with protected pension rights. Men worked mean of 55 hpw women worked 42hpw mean. Mean sessions per week 10 for men and 7 for women. Av hours in clinical work 33 for men and 26 for women. 92% of men participate in out-of-hours work but 74% of women. Of those who wish to change sessions, 96% of men wished to reduce their hours compared to 80% of women.
Gibson	2015	Age, sex, hours of work, contract type, practice size; job stressors on 14 item scale; job attributes on 15 item list; likelihood of retiring, increasing or reducing work hours, leaving in next 5 years; job satisfaction on 9 item Warr-Cook-Wall scale.	35.34% of respondents indicated a considerable likelihood that they would quit patient care in next 5 years. 50.96% intending to reduce work hours in next 5 years. 41% have considerable/high intention to leave UK/leave patient care/leave medical work in next 5 yrs. 35.29% high likelihood of reducing work hours in next 5 years vs 4.50% high likelihood of increasing work hours. p28 Table 19. Likelihood of changing working hours in next 5 yrs.	Proportion expecting to quit increased from 8.9% in 2012 to 13.1% in 2015 amongst GPs under 50. Increased from 54.1% in 2012 to 60.9% in 2015 amongst GPs 50 and over. Planned age of retirement for those aged 50+ is average 61, range of 51-75 yrs. P25 Table 15 p26 has likelihood of intention to quit by gender and age. Table 18 likelihood of leaving patient care within 5 yrs by age group. 21% of GPs under 50 and 63% of those 50+ have high intention to leave UK/leave patient care/leave medical work in next 5 yrs. GPs under 50 - 25% who did not intend to leave did intend to reduce work hours in next 5 years. 44% of GPs 50+ did not intend to leave but did intend to reduce hours in next 5 years.

1st author	Year	Determinants/associations assessed (verbatim)	Level of retirement intention/hours reduction planned in all respondents	Text describing the relevant results/associations (or retirement intentions etc. in subgroups)
Hutchins (2)	2005	Whether plan to continue as principal after study leave; perceived benefits of study leave	Only 1 respondent planned not to continue as principal after study leave	Positive reassessment of work and career 23%; renewed enthusiasm for primary care 21%; enjoyment of learning and working 10%. 68% achieved new appointment as a result, with 60% undertaking committee or advisory roles in addition to clinical work. 17% developed medical specialist role, 11% academic training role while continuing as GP. 10% said it had not been altogether positive taking study leave.
Luce	2002	12 factors influencing retirement decision (great, moderate or no influence) p306; 14 factors influencing later retirement (before, at or after 60) p307	68.7% had made plans to retire, average planned age 59.2%; 34.6% planned early retirement (before 60); 49% planned to retire at 60; 15% between 61-65 and 1.5% at 66 or older. Ideally would retire almost 2 years before planned but 12.9% would ideally retire later than planned. 78.3% planned to undertake some work after retirement, 34.5% planned complete retirement.	women more likely to plan early retirement (46.2%) than men (32.1%); 23.7% of those over 55 wanted to retire later than planned ideally and 8.2% of those under 55. Higher psychological distress on General Health Questionnaire = planned to retire earlier. Men more influenced to delay retirement by change in work role (62.8%), decreased clinical role (58.9%), opportunity to work peripatetically (24.4%), during term time only (22.4%). No specific factors for women. reducing clinical work seen as reason to delay retirement for GPs planing retirement before or at 60; increased pensions for later retirement and being encouraged to stay by partners more important for older GPs planning late retirement.

1st author	Year	Determinants/associations assessed (verbatim)	Level of retirement intention/hours reduction planned in all respondents	Text describing the relevant results/associations (or retirement intentions etc. in subgroups)
Martin (Health Foundation)	2015	Job satisfaction and stressors	30% plan to leave GP work in next 5 years.	67% of UK GPs very satisfied or satisfied with practising medicine, compared to 79% average for GPs in other countries p5 [was 84% of UK GPs in 2012 survey]. 59% of UK responders found practising 'very stressful' or 'extermely stressful', higher than any other country surveyed p9. Of the 12% of GPs planning to switch careers or specialisms, 77% are under 55 yrs old, p12. Of the 29% of GPs who intend to leave within 5 yrs, a third are under 55 and not planning to retire, p31. Fig 9 on p13 shows correlation between stress level and intention to leave.
McKinstry	2006	Expectation of change in workload and number of sessions in next 2 years, retirement intentions.	Overall doctors provide 7.4 clinical sessions a week and an additional 0.9 NHS work, educational or research.	"Doctors over the age of 35 infrequently worked more than 5 sessions." p4 Mean of 5.15 sessions per week of clinical work. Men 5.8 sessions women 4.9 sessions per week. 22 respondents intended to retire in next 5 years (mainly men). 12 intended to leave due to stress of job. Women more likely to think commitment to GP work would increase in next 5 years (28.5% women, 19.2% men).

1st author	Year	Determinants/associations assessed (verbatim)	Level of retirement intention/hours reduction planned in all respondents	Text describing the relevant results/associations (or retirement intentions etc. in subgroups)
Simoens (1)	2002	Job satisfaction with 9 aspects of work (Warr-Cook-Wall scale); job stressors on 31 item scale; gender, age, ethnicity, hours worked per week, type of GP, household income, no of GPs in practice, practice location, level of deprivation.	"around one-third" intend to reduce working hours within 5 years p82	Intend to leave within 2 years - 11% GP principals, 38% non-principals, 14% PMS GPs Household income not asscociated with intention to quit. PMS GPs=greater job satisfaction and lower intention to quit. GP principals most likely to intend to leave within 5 years and PMS GPs least likely to intent to quit. Male GPs more likely to intend to quit than female GPs. White GPs more likely to intend to quit than those from other ethnicity. GP principals who worked more than 50 hrs per week more likely to intend to quit than GPs who worked less than 50 hrs per week. GP non-principals in rural areas higher intention to quit than those in urban areas.
Taylor, D	1999	practice size, sex, deprived areas, innner/outer London	13% left practice in their health authority within 2 yrs	inner London, new entrant GPs retention rate was 82% compared with 89% outside London; 84% of women were retained compared with 90% of men
Taylor, K	2008	Job satisfaction	11.1% of male GPs work part time compared to 53.8% of female GPs.26.7% of GPs overall work part time.	Part time doctors much more satisfied with their leisure time Table 5 p196 leisure satisfaction score 4.4 for full time and 6.7 for part time (scale of 1-10)

Table 18 Factors associated with the intention to reduce hours, work part-time or take a career break

1st author	Year	Determinants/associations assessed (verbatim)	Level of actual part-time working or hours reduction planned, in all respondents	Text describing the relevant results/associations (or retirement intentions etc. in subgroups)
French	2006	Warr-Cook-Wall job satisfaction scale (10 items) gender, whether spouse is doctor or not	Where women and men worked comparable hours, differences in job satisfaction disappeared.	Women had greater job satisfaction if worked fewer hours. Men worked mean of 55 hpw, women worked 42hpw mean. Mean sessions per week 10 for men and 7 for women. Av hours in clinical work 33 for men and 26 for women. 92% of men participate in out-of-hours work but 74% of women. Of those who wish to change sessions, 96% of men wished to reduce their hours compared to 80% of women.

1st author	Year	Determinants/associations assessed (verbatim)	Level of actual part-time working or hours reduction planned, in all respondents	Text describing the relevant results/associations (or retirement intentions etc. in subgroups)
Young	2001	Importance of 12 job related and 9 personal factors in prompting them to leave age, gender	Table 2 p708 has detailed findings - job and personal factors by age and sex Overall most important factors were: workload, NHS changes, high patient expectations, retirement	Table 2 p 708: Dissatisfaction with NHS changes was more important amongst older age groups as a trigger to early retirement. Job related factors - partnership problems, lack of career development, lack of flexible working hours, more important for younger leavers. Personal factors- family-work balance, geographical mobility, more important for younger leavers. Gender differences - older women rated partnership problems as more important - younger women rated childcare responsibilities and partner moving jobs. Younger men - job related factors, NHS changes. Only 7% said increased remuneration would make them return 17% said needed greater flexibility and 11% change of family circumstances 40% of younger leavers had not returned

Table 19. Factors associated with intention to quit fully from providing general practice care (non-UK studies)

1st author	Year	Determinants/associations assessed (verbatim)	Level of retirement intention/hours reduction planned in all respondents	Text describing the relevant results/associations (or retirement intentions etc. in subgroups)
McComb (New Zealand)	2006	Demographic (gender, age, life status, number of children, number of family members who are also GPs, practice ownership, income, hours worked). Psychological (satisfaction with general practice and commitment to general practice) - scored with 5 point Likert scale. Commitment scale had 18 questions, satisfaction scale had one item only.	12.2% intended to leave within 6 months 28.8% intended to leave within 5 years	Self-employed GPs - 10% intended to leave within 6 months, 25% within 5 years. Locums - 18% within 6 months 36% within 5 years. Other - 17% within 6 months 34% within 5 years.
Dewa (Canada)	2007	Professional dissatisfaction using 5 point scale (Likert?); Burnout using 9 items from Maslach Burnout Inventory; Age.	Intention to retire within next 2 years (not reported for whole group)	Of those who were professionally Dissatisfied: 24.4% of those aged 55-64 years intended to retire within 2 years 8.4% of those aged 45-54 years 5.3% of those aged <45 years Of those who were professionally Not Dissatisfied: 11.0% of those aged 55-64 years intended to retire within 2 years 8.4% of those aged 45-54 years 5.3% of those aged <45 years Differences between Dissatisfied and Not dissatisfied: all p<0.0001

1st author	Year	Determinants/associations assessed (verbatim)	Level of retirement intention/hours reduction planned in all respondents	Text describing the relevant results/associations (or retirement intentions etc. in subgroups)
Brett (Australia)	2007-2008	age, gender, 9 options why leaving early, 7 options that might encourage to stay	63% intend to work as GP until at least 65 yrs, 6% unsure when they will retire (i.e. 31% intending to retire before age 65)	75% of women GPs plan to work to age 65 but only 59% of men; men more likely to intend to retire early. [NB women more satisfied with their work and working fewer hours but carry on working for longer.]
Pit & Hansen (Australia)	2011	Burnout and occupational health measures: Maslach Burnout Inventory (9 item Emotional Exhaustion subscale only); single item job satisfaction measure; 5 item version of Effort-Reward Imbalance Questionnaire; 3 item version of Work Ability Index; 6 item Kessler Psychological Distress Scale; global health question from SF-36.	Mean age of intended retirement from direct patient care was 63.5 (SD=6.9); 47% intending to retire before 65.	GPs with early retirement intentions = younger, worked average 8hrs more per week, more sleep problems, feel they don't get respect deserved at work, higher levels of burnout and distress, lower job satisfaction and perceived lifetime best work ability. GPs with medium or high burnout scores had 4 times the odds of wanting to retire early – (Table 2 p302). GPs reporting work-related sleep problems = 3 x increase in odds of early retirement intentions. Early retirement intentions increased with higher psychological distress scores and in those in fair/poor general health. Presenteeism = 74% among those planning early retirement.

Table 20 Factors associated with the intention to reduce hours, work part-time or take a career break (non-UK studies)

1st author (Country)	Year	Determinants/associations assessed (verbatim)	Level of actual part-time working or hours reduction planned, in all respondents	Text describing the relevant results/associations (or reduction/part-time intentions in subgroups)
Woodward (Canada)	1993 & 1999	Gender, spouse working full time, child younger than 6, no children, spouse is physician, rural practice.	In 1993 physicians would prefer to work 37 hours a week; in 1999 would prefer to work 34 hours per week. Actual hours worked did not change significantly.	
Dewa (Canada)	2007	Professional dissatisfaction using 5 point scale (Likert?); Burnout using 9 items from Maslach Burnout Inventory; Age.	NS	Of those who were professionally Dissatisfied: 13.5% of those aged 55-64 years intended to reduce their clinic hours 13.5% of those aged 45-54 years 10.7% of those aged <45 years Of those who were professionally Not Dissatisfied: 6.6% of those aged 55-64 years intended to reduce their clinic hours 7.0% of those aged 45-54 years 5.7% of those aged <45 years Differences between Dissatisfied and Not dissatisfied: all p<0.05
Shrestha (Australia)	2008	Work-life balance (WLB) satisfaction (Likert scale)	52.9% reported good WLB.	GPs reporting poor WLB intend to reduce hours (OR = 0.10, 95% CI = 0.09-0.12, P<0.001). However, this association not explained by lower job satisfaction. WLB alone explained 20% of the variation in intention to reduce hours.

1st author (Country)	Year	Determinants/associations assessed (verbatim)	Level of actual part-time working or hours reduction planned, in all respondents	Text describing the relevant results/associations (or reduction/part-time intentions in subgroups)
Norman & Hall (Australia)	2010 & 2011	age, sex, health, family circumstances, work satisfaction, work hours, whether do on-call work, business relationship with practice, practice location, income, density of GPs, patient population.	43% of 3,377 GPs stated a desire to reduce hours in 2010 (wave 3 of MABEL survey). Of 1,177 of those GPs who also had data in 2011 survey, 26.8% had successfully reduced their working hours by more than 5 hours. Of the 861 GPs unable to reduce their hours, 75.1% still had desire to reduce hours in 2011.	Older GPs, females, those in less good health, less satisfied were more likely to want to reduce hours. GP working >60 hours per week more likely to want to reduce hours (six times more likely). GP partners more likely to want to reduce hours. Middle-aged male GPs had very strong desire to reduce hours. Ability to actually reduce hours was predicted by age, sex and no of hours currently worked. Middle-aged GPs around 50 yrs least likely to achieve desired reduction in hours. Female GPs more likely to reduce hours. GPs working longer hours more likely to successfully reduce hours.

1st author (Country)	Year	Determinants/associations assessed (verbatim)	Level of actual part-time working or hours reduction planned, in all respondents	Text describing the relevant results/associations (or reduction/part-time intentions in subgroups)
RNZCGP (New Zealand)	2015	Gender, age, reasons for working part time, urban and rural	p25 Fig 12 has hours worked per week as GP -largest group works 31-40 hpw (32.1%)	Sex: mean hours per week worked: men 38.7 women 30.1. (Fig 13 p 26). 65% of women worked part time as GP and 31% of men. 70% of part time GPs were female and 30% were male - Table 7 p27 Age: Longest hours worked by 25-29 age band and 55-65 age band - Fig 14 p28. Females in all age bands worked fewer hours than males esp in 35-44 age band - Fig 15 p 28. Fig 16 p29 has age profile by gender of responders working 20 hrs or less per week - average age for women 46 yrs and for men 59 yrs. 53% cited family responsibilities as reason for working part time - and 89% of these were female. Fig 19 p 32 45% of females cited family as reason for part time work; 46% of males cited personal choice. Fig 20 p33 shows family responsibilities of those working part time for family reasons. Fig 21 p34 Female respondents intended working hrs in 5 yrs - those aged 35-39 intend to increase hours (38%). Table 9 p35 25% of men have weekly after-hours work.

APPENDIX F – Summary of PPI discussion of emerging review findings

The following PPI discussion points broadened our understanding of the above literature-derived themes (especially in response to the initial synthesis of qualitative interview-based studies).

Flexible Working

While flexible working can bring benefits to individual GPs (young and old) such as freedom from paper work and freedom to pursue other interests, it can increase workload for other practice GPs if they have difficulty recruiting other partner GPs or locums. Discussion with our PPI group suggested that flexible working can have a potentially negative effect on patients who seek appointments with the same GP that they know and have built history and rapport with. If they are consistently inaccessible to them because of their flexible working patterns, patients may experience grief at the loss of the relationship. This could have implications for the NHS as there may be more referrals to secondary care as a consequence. In such circumstances, it is often more acceptable to the patient if the GP retires as this is a predictable and understandable reason for the end of the doctor-patient relationship.

While increasing the availability of locums may relieve pressure on full time GPs and aid retention of salaried GPs / partners, there was concern from the PPI group that GPs who preferred to travel between GP practices working as locums may choose to do so because it means that they avoid building Doctor - patient relationships. Different personalities may suit different working styles, with permanent salaried GPs / partners having different values and personalities to locums and perhaps valuing the doctor-patient relationship higher.

Continue and Cope

While GPs talk in the semi-structured interviews about strategies that help them to cope with increasing workload and pressures, members of the PPI group note that there is no mention of destructive “coping strategies” such as mis-using alcohol or drugs and no mention of GP use of anti-depressants. There is also no reporting of GPs accessing counselling services in the interviews.

Viability of Early Retirement

The PPI group expressed the view that the GP Cultural norm of acceptability of early retirement may be compounded further by GPs expert knowledge about the human body. Because GPs are more able to predict expected deterioration with age, they may be more likely to plan for early retirement when so that they can physically do the things they enjoy.

Ageing

The PPI group noted that holiday entitlement is not mentioned in any of the GP interviews and suggested increased holiday entitlement for aging GPs may help GPs manage their natural fatigue and ultimately improve retention.

Partnership Issues

The qualitative synthesis and explanatory model in this review highlights the importance of good practice relationships for GP retention. When these are not in place, GPs can experience a lack of support which may lead to quitting. The PPI group note that different GPs with different personalities / values / working styles may experience conflict when working together in the same practice. PPI members consider GPs to be naturally competitive and prone to compare themselves to each other. A more sociable patient-focused GP may have a different working style to a more "efficient" target-focused GP and the target focused GP may comment negatively on such differences.

Commitment and Investment

The qualitative synthesis highlights the uncertainty around future commitment to investing in future GP practice. The PPI group notes that GPs are a risk adverse people who are driven by financial security. The suggest that younger GP coming out of medical school with financial debts may be less inclined to take on the financial risk of becoming a partner especially with the negative media portrayal and general uncertainty. The PPI group note that salaried GPs are better off than partners as they do not have the financial risks associated with being a partner, and the PPI group pose the question "Would all GPs prefer to be salaried? Could this be a way forward?"

The qualitative synthesis highlights concerns about the difficulties of recruiting new partners to a GP practice to replace a retired GP partner. Because GP practices are independent businesses, GP partners are needed. However, younger GPs may be reluctant to take on partnerships because of the added responsibilities involved. The PPI group note that practice environment / demographic may impact on GP recruitment, with smaller practices suffering most. The PPI group also expressed the view that many GPs may not have good business skills or be trained in HR, and consequently may not be skilled in interviewing and recruitment. They may be less likely to take a professional approach to legal things e.g. signing contracts, with some preferring to do things "on trust" and hence deny/hide/ignore commitment issues.

Impact of Organisational Changes:

Referrals

Complex referral systems, more specialised hospitals and delays in communication contribute to GPs experience of fragmentation and a depersonalised healthcare system. (Campbell 2015).The PPI group confirm that in their experiences there is poor linking of secondary and primary care. They observe that decisions to change medications / dose are made in secondary care by nurses and pharmacists and that there is much more choice available in secondary care. When patients then comes back under the responsibility of the GP, the GP may not be familiar with the drug(s) prescribed. This responsibility coupled with a lack of knowledge may cause stress. It was noted by the PPI group that GPs were naturally

proud and so less able to admit it if they do not know something and this may compound the issue.

Doctor-Patient relationship

The qualitative synthesis indicates that lack of time with patients means the ability to practise patient-centred continuity of care is compromised. This impacts the GPs' professional autonomy and values, resulting in diminished job satisfaction for GPs and diminished satisfaction for patients. The PPI group noted how important and valued by patients doctor-patient rapport and personalised knowledge was, and how this could sometimes result in increased efficiency with respect to referrals. They explain how a GP who knows a patient's history and who has a good rapport may be more likely to prescribe a drug / therapy already prescribed that might reduce the need for secondary care. Such GPs may also make appropriate and timely referrals to secondary care based on a patients' request and their knowledge of the patient's history.

Patients' Demands

The qualitative synthesis indicates that patient demand (increased number and increased expectations) coupled with a shortage of GPs and available appointments is adding to a feeling of increased pressure which is making some GPs consider retiring. Patient demands may be higher if GP practices are situated in areas of higher deprivation with populations with multiple health and social problems and working with elderly populations with multiple comorbidities and social care needs (Campbell 2015).

The PPI group note that patient demands may also be higher in multicultural communities as they may require more skilled communication from the GPs. In response to the discussion, the PPI facilitator also noteed that patients are often ill-informed about how a practice works and so may be unknowingly wasting time and adding to GP pressure. It was suggested that this could be avoided if patients were provided with information about the structure and function of the practice and were guided in how to most efficiently engage with the practice.

Practice Demands

The qualitative synthesis indicates that GPs in smaller practices were more likely to feel trapped between continuing to work full-time under extreme pressure in order to support colleagues, or to retire completely. Difficulty in recruiting locums precluded many form working part time. In an unsupportive environment, having to take on the responsibility for a partner's absence, ill health, or early retirement can add to feelings of burden and stress. Whereas, in the more supportive practice, such scenarios are better managed by the team. (Campbell 2015)

The PPI group commented on the finding (from the review of survey studies) that GPs working in very small and in large practices (more than 10 partners) are more likely to quit, with medium sized practices more likely to retain GPs. They suggest that this could be down to smaller practices being less able to adapt and being more reactive, while larger practices

do not have the strong relationships in place to support the GPs as larger practices may be less able to get everyone together at the same time and there may be less opportunity for communication and relationship building. Consequently, GPs in large practices may feel "invisible", not "part of something" and so less loyal.

Acceptability of early retirement

In the qualitative synthesis, GPs describe a permeating "bullying culture" form the top down and the PPI group acknowledge this and confirm a culture of government bullying via NHS England to salaried GPs. The PPI group think that this is one of the reasons why autonomy is so important to GPs. They also note a historical precedence for GPs to be independent and autonomous due to GP clinics traditionally being operated from a GP's living room. The PPI group describe how sometimes practice managers may be strong characters with too much influence over the practice GPs. They suggest that better training in HR and interviewing for GPs may aid recruiting and could potentially avoid such circumstances.