NIPH
Norwegian Institute of Public Health

REPORT

2019

# SCOPING REVIEW:

## Effects and experiences of part-time work in the health- and community-care services

| | |
|---|---|
| **Title** | Effects and experiences of part-time work in the health- and community-care services: a scoping review |
| **Norwegian title** | Effekter og erfaringer av deltidsarbeid i helse- og omsorgstjenesten: en systematisk kartleggingsoversikt |
| **Institution** | National Institute of Public Health, Division of Health Services<br>Camilla Stoltenberg, *Director* |
| **Authors** | Flodgren M Gerd, *Project leader, Senior researcher, NIPH*<br>Bidonde Julia, *Researcher, NIPH* |
| **ISBN** | 978-82-8406-025-5 |
| **Project number** | RL027 og RL028 |
| **Type of report** | Scoping review (kartleggingsoversikt) |
| **No. of pages** | 41 (70 including appendices) |
| **Client** | The Directorate of Health |
| **Subject heading (MeSH)** | Health personnel, part-time and work |
| **Citation** | Flodgren GM, Bidonde J. Effects and experiences of part-time work in the health- and community-care services: a scoping review. (Effekter og erfaringer av deltidsarbeid i helse- og omsorgstjenesten: en kartleggingsoversikt )–2019. Oslo: National Institute of Public Health |

# Key messages

There is a large proportion of health- and community-care personnel working part-time in Norway. It is suggested that part-time work may have a negative impact on the quality and continuity of care, but also that it may allow for a better work-life balance. However, little is known with certainty about the consequences of part-time work. The key findings from this scoping review, which was commissioned by the Directorate of Health, are as follows:

- A majority of the 23 included studies were cross-sectional. Two studies were qualitative, and two were literature reviews. There were no effect studies, and thus information on the effects of part-time work is lacking.
- Outcomes reported were mostly related to the personnel (e.g. job satisfaction, work status incongruence, psychological well-being, access, continuity and quality of care). Less than half of the studies reported any patient outcomes. Patient satisfaction, was only reported in studies of physicians. Many outcomes were reported in single studies only. No study reported any of the outcomes listed in our protocol (e.g. infections, information failure, medication errors, malpractice).
- The definitions of part-time work varied widely across studies. Most studies included nurses, or physicians. Two studies included home-care personnel. Studies of nurses were typically hospital-based, while studies of physicians mainly were set in primary care. Eighteen of the included studies were from North America, and Australia. Four studies were from different European countries, and one study was from Israel.
- The problems of part-time work addressed varied across studies and occupational groups, e.g. forced part-time work, communication practices, and 'disconnection' in studies of nurses, while in studies of physicians common problems concerned access, quality and continuity of care. A mutual problem addressed was commitment to the patients and the profession.

Conclusion: This scoping review shows a field with a total lack of effect studies, a large variation in the definitions of part-time work used, the concepts/problems addressed, as well as in the outcomes reported.

**Title:**
Effects and experiences of part-time work in the health- and community-care services: a scoping review

---

**Type of publication:**
Scoping review

A scoping review review maps out and categorizes existing research on a topic, identifying research gaps that can guide future research.

---

**Doesn't answer everything:**

- No studies concerned with issues related to administration, scheduling, recruitment, retention, feasibility, pension schemes and policy implementation.
-No studies from low- and middle-income countries.

---

**Publisher:**
The National Institute of Public Health

---

**Updated:**
Last search for studies: Janruary 2019.

---

**Peer review:**
Since this is a scoping review, it did not go through peer-review.

# Executive summary

## Background

There is a shortage of nurses in Norway as well as globally. Adding to this problem is the large number of healthcare personnel who work part-time. It has been suggested that part-time work may have a negative impact on users' and patients' perceived quality of care, and on the healthcare personnel. On the other hand, research shows that part-time work may allow healthcare personnel to better balance life and career interests. However, we know little for certain, about the consequences of part-time work on patients and healthcare personnel.

## Objective

To explore and map the available evidence of part-time (PT) work (including studies of effects and experiences) in the health- and community care services.
More specifically we aimed to explore:

a. What kind of publications are reporting effect and experiences of PT work, and what are the main outcomes reported?
b. What kind of PT work (definitions included) and which occupational groups have been studied, and in which locations and settings have the studies been conducted?
c. Have any limitations or challenges of PT work been reported in the published literature?

## Method

We conducted a scoping review in accordance with the methodology manual published by the Joanna Briggs Institute. We searched for literature in 14 databases from 2000 and up to January 2019, with no study design, or language restrictions. We excluded conference papers, editorials and letters. Two authors independently screened titles and abstracts, and assessed full text studies. One review author extracted data onto a standardised and piloted data extraction form, and a second review author checked the accuracy of the extracted data. We synthesised the results narratively in text, and mapped and charted the data using tables and graphics (e.g. bar-charts, bubble-plots, and mind-maps).

**Inclusion criteria:**

We considered any study that provided relevant information regarding part-time work (including effect and experiences) in the healthcare- or in the community care services that was in accordance with our pre-defined PICCO (population, intervention, comparison, context, and outcomes) criteria, which were as follows:

| | |
|---|---|
| Population: | Any patient, or user, with any health condition(s), receiving care in a healthcare setting, in the community (e.g. residents in care homes), or in their own home, and the relatives or caregivers.<br>Any type of personnel providing care directly to patients (e.g. nurses, physicians, assisting personnel, physiotherapists). |
| Intervention: | Any evaluation study concerned with PT work, independently of study design, duration of intervention and follow up (or no intervention). |
| Comparison: | Any comparator (e.g. settings with higher/lower proportion of part-time personnel), or no comparator. |
| Context: | Any health- or community-care setting in any high-income country. |
| Outcomes: | Any objective patient or user outcome related to quality of care and patient safety (e.g. infections, pressure ulcers, falls), as well as outcomes related to the experiences of patients or users (e.g. satisfaction with care, quality of life).<br>Any objective outcome related to the quality of care delivered by the personnel (e.g. information failure, medication errors, malpractice), as well as outcomes related to the experiences of the personnel (e.g. job satisfaction, work engagement, motivation, burnout). |

## Results

We included 23 studies of which a majority were cross-sectional. Two studies were qualitative, and two were literature reviews. None of the studies were effect studies. Studies targeting nurses, and physicians dominated. Only one study included participants with any other occupation (home care personnel, i.e. nurses, therapists, and personal support workers). Studies of nurses typically took place in hospitals, while studies of physicians mainly were set in primary care. Two studies of home care workers was set in the community. A majority of studies were conducted in North America, and Australia. Four studies were conducted in Europe, of which one in Scandinavia. One study was from Israel. A majority of the included studies used surveys (self-report) as their main method of investigation, and a few studies used other types of data (e.g. administrative data). A wide variety of definitions of part-time work was used across included studies. Many of the studies of nurses, and some of the studies of physicians, did not provide any definition of part-time work. The included studies addressed a number of different concepts/problems, and a number of

different outcomes related to them, for example: work incongruence (e.g. forced part-time work), communication practices, 'disconnection' in the workplace, access, continuity and quality of care, staff shortages and more staff choosing to work part-time, clinical competence, and trust relationships. Work status incongruence was only addressed in studies of nurses. Clinical competence was only addressed in studies of physicians. Commitment to patients and occupation was addressed in both studies of nurses and of physicians. A majority of the reported outcomes were related to the healthcare personnel, while a minority of the included studies reported any patient outcomes. Patient satisfaction, which was the most commonly reported patient outcome, was only reported in studies of physicians. Many outcomes were reported in single studies only. None of the included studies reported any of the outcomes related to quality of care and patient safety that we had listed in our protocol (e.g. infections, pressure ulcers, falls, information failure, medication errors).

## Discussion

A majority of the included studies were cross-sectional, and therefore cause and effect relationships cannot be inferred from the results. Few studies reported on the experiences of patients, and personnel. No standardized definition of part-time work was used, which hampers comparisons across studies. Since studies of nurses and physicians conducted in hospitals and in primary care dominated, we have little information about how part-time work may influence other types of personnel, or personnel working in other settings (e.g. community care). A majority of the included studies were conducted outside Europe, and only one old study in Scandinavia. It may be questioned whether the results can be generalized to Norwegian conditions. The included studies were heterogeneous also in terms of concepts/problems addressed, and outcomes reported. Outcomes of special relevance for quality of care and patient safety (as those listed in our protocol), were not reported in any of the included studies. Many studies also suffered from a number of other limitations (e.g. use of old data, data based on self-report).

## Conclusion

This scoping review shows a field totally lacking effect studies, a large variation in the definitions of PT used, concepts/problems addressed, and in the outcomes reported. Heterogeneous studies and a lack of a standardised definition of part-time work, hampers any attempt to pool, or compare, results across studies. Future studies should aim to use a standardized definition of part-time work to enable comparisons across studies. They should use robust study designs to assess the effects of part-time work on patients and personnel. Further, they should also assess the effects and experiences of part-time work in the community care services, where the proportion of part-time personnel is the highest, and assess outcomes directly related to quality of care and patient safety.

# **Hovedfunn** (norsk)

En stor andel av helsepersonell i Norge arbeider deltid. Det har vært påstått både at deltidsarbeid kan ha en negativ innvirkning på kvaliteten og kontinuiteten i tjenestene, og at det kan muliggjøre en bedre balanse mellom arbeid og privatliv. Vi vet imidlertid svært lite om konsekvensene av deltidsarbeid. Hovedfunnene fra denne kartleggingsoversikten, som er bestilt av Helsedirektoratet, er som følger:

• Flertallet av de 23 inkluderte studiene var tverrsnittstudier. To studier var kvalitative, og to var litteraturoversikter. Det var ingen effektstudier, og dermed mangler informasjon om virkningen av deltidsarbeid.
• Rapporterte resultater var hovedsakelig relatert til helsepersonell (f.eks. jobbtilfredshet, uoverensstemmelse mellom ønsket og faktisk arbeidsstatus, psykisk velvære, tilgjengelighet, kontinuitet og omsorgskvalitet). Færre enn halvparten av studiene rapporterte pasientutfall som f.eks. pasienttilfredshet, som kun ble rapportert i studier om leger. Mange forskjellige utfall ble rapportert, men ingen studie rapporterte noen av utfallene listet i protokollen vår (f.eks. infeksjoner, informasjonsfeil, medisineringsfeil, feil-behandling).
• Definisjonene av deltidsarbeid varierte mye mellom studier. De fleste studier omfattet sykepleiere eller leger. To studier omfattet kommunalt omsorgspersonell. Studier med sykepleiere var vanligvis sykehusbaserte, mens studier med leger hovedsakelig var i primærhelsetjenesten. Atten av de inkluderte studiene var fra Nord-Amerika og Australia. Fire studier var fra forskjellige europeiske land, og en studie var fra Israel.
• Konseptene/problemene med deltidsarbeid som var adressert i studiene varierte på tvers av yrkesgrupper, f.eks. tvunget deltidsarbeid, kommunikasjonspraksis og "frakobling" fra arbeidsplassen i studier som omfattet sykepleiere, mens i studier som omfattet leger var problemene vanligvis relatert til tilgang, kvalitet og kontinuitet i tjenestene. Et felles problem som var studert hos både sykepleiere og leger var forpliktelse til pasientene og yrket.

Konklusjon: Denne kartleggingsoversikten viser et felt med total mangel på effektstudier. Det var stor variasjon i definisjoner av deltidsarbeid, hvilke begreper og problemer som ble studert, og hvilke utfallsmål som ble rapportert.

**Tittel:**
Effekt og erfaringer av deltids-arbeid i helse- og omsorgstjenesten: en systematisk kartleggingsoversikt

---

**Publikasjonstype:**
Systematisk kartleggingsoversikt

En kartleggingsoversikt kartlegger og kategoriserer eksisterende forskning på et tematisk område og identifiserer forskningshull som kan lede til videre forskning

---

Svarer ikke på alt:

-Ingen studier relatert til administrasjon, skjemalegging, rekruttering, og bevaring av personell, gjennomførbarhet, pensjonsordninger og implementering av retningslinjer.
-Ingen studier fra lav- og mellominntektsland.

---

Hvem står bak denne rapporten?

Folkehelseinstituttet

---

Når ble litteratursøket utført?

Søk etter studier ble avsluttet januar 2019.

---

Fagfeller:
Da dette var en kartleggingsoversikt trengtes ikke noen fagfellevurdering.

# **Sammendrag** (norsk)


**Effekter og erfaringer av deltidsarbeid i helse- og omsorgstjenesten**

## Bakgrunn

Det er mangel på sykepleiere både i Norge og globalt. I tillegg er den stor andel av helsepersonell som jobber deltid et problem. Det har vært antydet at deltidsarbeid kan ha en negativ innvirkning på kvaliteten av tjenestene. På den annen side viser forsking at deltidsarbeid gir bedre mulighet til å balansere hverdagsliv og karriere. Vi vet imidlertid svært lite om konsekvensene av deltidsarbeid for pasienter og helsepersonell.

## Problemstilling

Å utforske og kartlegge forskning om deltidsarbeid (inkludert studier om effekter og erfaringer) i helse- og omsorgstjenestene.

Mer spesifikt skulle vi å kartlegge:
a. Hvilke typer publikasjoner som rapporterer effekt og erfaringer med deltidsarbeid, og hva de viktigste utfallene er?
b. Hva slags deltidsarbeid (og hvilke definisjoner som er brukt), hvilke yrkesgrupper har blitt studert, og i hvilke steder og settinger somstudiene er blitt gjennomført i?
c. Hvilke begrensninger eller utfordringer med deltidsarbeid er blitt rapportert i den publiserte litteraturen?

## Metode

Denne kartleggingsoversikten er utført etter metodehåndboken utgitt av Joanna Briggs Institute. Vi søkte etter litteratur i 14 databaser fra 2000 og frem til januar 2019 uten restriksjoner i studiedesign eller språk. Vi ekskluderte konferansedokumenter, redaksjonelle kommentarer og brev. To forfattere leste titler og abstrakt, og vurderte studier i fulltekst uavhengig av hverandre. En forfatter hentet ut data til et standardisert og pilotert dataekstraksjonsskjema, og en annen sjekket nøyaktigheten

av uthentingen. Vi oppsummerte resultatene i tekst og tabeller, og presenterte resultatene grafisk (som for eksempel søylediagram, boblefigurer og andre figurer).

**Inklusjons-kriterier:**

Vi vurderte alle studiene som hadde relevant informasjon om deltidsarbeid (inkludert effekt og erfaringer) i helse- og omsorgstjenestene og som var i samsvar med vår forhåndsdefinerte (PICCO) spørsmål; populasjon, intervensjon, sammenligning, setting og utfall. Kriteriene var:

| | |
|---|---|
| Populasjon: | Pasienter eller brukere, uavhengig av helsetilstand, som mottar omsorg i helsevesenet, i samfunnet (f.eks. beboere i pleiehjem), eller i eget hjem og slektninger eller omsorgspersoner.<br>Personell som yter tjenester direkte til pasienter (f.eks. sykepleiere, leger, assisterende personell, terapeuter etc.) i helse- og omsorgstjenestene. |
| Intervensjon: | Evalueringsstudier av deltidsarbeid, uavhengig av studiedesign, varighet av tiltak og oppfølging (eller ingen intervensjon) |
| Sammenligning: | Annet arbeidsforhold (for eksempel fulltidsarbeid, høyere eller lavere andel deltid), eller ingen sammenligning. |
| Kontekst: | Helse- eller omsorgs-setting i et høyinntektsland. |
| Utfall: | Objektive pasient- eller brukerutfall relatert til kvaliteten på omsorg eller pasientsikkerhet (f.eks. infeksjoner, trykksår, fall), samt utfall relatert til pasienters eller brukeres erfaringer (f.eks. tilfredshet med omsorg, livskvalitet). Kvaliteten på omsorgen levert av personellet (f.eks. informasjonssvikt, medisineringsfeil, feilbehandling), samt utfall relatert til erfaringer av personell (f.eks. jobbtilfredshet, arbeidsprosess, motivasjon, utbrenthet). |

## Resultat

Vi inkluderte 23 studier hvorav majoriteten var tverrsnitt-studier. To studier var kvalitative og to var litteraturoversikter. Ingen av studiene var effektstudier. Studier om sykepleiere og leger dominerte. Kun en studie inkluderte deltakere fra andre profesjoner (omsorgspersonell, personlig støttepersonell, ol.). Studier som omfattet sykepleiere fant vanligvis sted på sykehus, og studier som omfattet leger i primærhelsetjenesten. To studier som omfattet omsorgspersonell var gjennomført i den kommunale omsorgstjenesten. Majoriteten av studiene ble gjennomført i Nord-Amerika og Australia. Fem var gjennomført i Europa, hvorav en fra Skandinavia (Sverige). Én studie var fra Israel. Majoriteten av studiene brukte spørreskjemaundersøkelser (selvrapporterte) som hoved-metode. Noen få studier brukte administrative data. De inkluderte studiene benyttet et bredt spekter av definisjoner på deltidsarbeid. Mange studier om sykepleiere og noen om leger hadde ingen definisjon av deltidsarbeid. Studiene adresserte forskjellige begreper/problemer og utfall relatert til disse, f. eks. mangle på samsvar mellom ønsket og faktisk arbeidsstatus (f.eks.

når personell blir tvunget til å arbeide deltid), kommunikasjonspraksis, 'frakobling' fra arbeidsplassen, tilgjengelighet, kontinuitet og kvalitet på tjenestene, mangel på personale, og klinisk kompetanse. Mangel på samsvar mellom ønsket og faktisk arbeidsstatus var kun rapportert i studier som omhandlet sykepleiere. Klinisk kompetanse ble kun rapportert i studier som omhandler leger. Forpliktelse mot pasienter og profesjon ble adressert både i studer om sykepleiere og om leger. De fleste studier rapporterte utfall relatert til helsepersonell, mens kun noen få rapporterte pasientutfall. Pasienttilfredshet, som var det oftest rapporterte pasientutfallet, ble kun rapportert i studier som omhandlet leger. Ingen av studiene rapporterte utfall relatert til kvalitet og pasientsikkerhet som var forhåndsdefinert i protokollen (f.eks. infeksjoner, trykksår, informasjonsfeil, og medisineringsfeil).

## Diskusjon

Flertallet av de inkluderte studiene var tverrsnitts-studier. Vi kan derfor ikke si noe om effektene av deltidsarbeid.  Få studier rapporterte om pasienters eller personellets opplevelser. Ingen av studiene brukte en standardisert definisjon av deltidsarbeid, noe som gjør det vanskelig å sammenligne studiene. Siden studier som omhandlet sykepleiere og leger som var utført i sykehus og primærhelsetjenesten dominerte, så har vi lite informasjon om hvordan deltidsarbeid kan påvirke andre typer tjenester og personell. De fleste studiene ble utført utenfor Europa, og det var kun en eldre studie fra Skandinavia (Sverige). Det er derfor tvilsomt om resultatene kan appliseres på norske forhold. De inkluderte studiene var heterogene med hensyn til konsepter/problemer som de studerte og hvilke utfall de rapporterte. Utfall av spesiell relevans for tjenestekvalitet og pasientsikkerhet (listet i vår protokoll), ble ikke rapportert i noen av de inkluderte studiene. Mange studier hadde også andre begrensninger (f.eks. bruk av utdaterte, og/eller selvrapportert data).

## Konklusjon

Denne kartleggingsoversikten viser et felt der det mangler effektstudier. Det var stor variasjon i definisjoner av deltidsarbeid, begreper og problemer som ble undersøkt, og i hvilke utfallsmål som ble rapportert. Heterogene studier og fravær av en standardisert definisjon av deltidsarbeid gjør det vanskelig å oppsummere og sammenligne resultater på tvers av studiene. Fremtidige studier bør bruke en standardisert definisjon av deltidsarbeid for å muliggjøre sammenligninger på tvers av studier. De bør bruke robuste studiedesign for å vurdere effekten av deltidsarbeid på pasienter og personell. Videre bør effektene og opplevelsene av deltidsarbeid i omsorgstjenestene, hvor andelen deltidspersonell er høyest undersøkes. Studiene bør vurdere utfallsmål som er direkte relatert til tjenestekvalitet og pasientsikkerhet.

# Table of contents

**KEY MESSAGES** **2**

**EXECUTIVE SUMMARY** **3**
Background 3
Objective 3
Method 3
Results 4
Discussion 5
Conclusion 5

**HOVEDFUNN** (NORSK) **6**

**SAMMENDRAG** (NORSK) **7**
Bakgrunn 7
Problemstilling 7
Metode 7
Resultat 8
Diskusjon 9
Konklusjon 9

**TABLE OF CONTENTS** **10**

**PREFACE** **12**

**OBJECTIVE** **13**

**BACKGROUND** **14**
Description of the problem 14
Why is it important to do this scoping review 15

**METHOD** **16**
Literature search 16
Inclusion criteria 17
Exclusion criteria 18
Article selection 18
Data items and data extraction process 19
Critical appraisal of individual sources of evidence 19
Synthesis of results 19

**RESULTS** **20**
Search results 20
Preliminary report of a sub-group of studies 20
Description pf included studies 21

**DISCUSSION** **34**
Limitations with the included studies 35
Strengths and limitations with this scoping review 35

**CONCLUSION** **36**
Need for further research 36

**REFERENCES** **37**

**APPENDICES** **41**
Appendix 1. Full search strategies 41
Appendix 2. Excluded studies (N=29) 49
Appendix 3. Summaries of included qualitative studies (N=2) 51
Appendix 4. Characteristics of included studies (N=23) 53
Appendix 5. Personal characteristics of healthcare personnel in the included studies 54
Appendix 6. Education and occupational characteristics of healthcare personnel in the included studies 56
Appendix 7. Outcomes reported in the included studies 58
Appendix 8. Data collection, response rate, outcomes, main (narrative) results, and study limitations 59
Appendix 9. Sources of funding in included studies 66
Appendix 10. Concepts, aims, theory, and methods used in included studies 67

# Preface

The Norwegian Directorate of Health is responsible for implementing *Kompetanseløft* 2020 (1), which is the Government's plan for recruitment, competence and professional development in the community healthcare services. They therefore seek more knowledge about how part-time (PT) work affects the users (i.e. patients, families and caregivers), as well as personnel working in the health- and community-care services, in order to fulfil their role of professional advisor in terms of needs, solutions and tools in the personnel field. The Division of Health Services at the Norwegian Institute of Public Health (NIPH) conduct systematic evidence summaries (e.g. systematic reviews, scoping reviews) of priority questions for the work on national guidelines. As these products have short time-frames we do not write comprehensive backgrounds, discussion or make comprehensive definition lists. This scoping review on the *Effects and experiences of part-time work in the healthcare and community care services,* was conducted on this mandate from the Norwegian Directorate of Health.

The project group consisted of:

- Project leader: Senior researcher, Gerd M Flodgren; National Institute of Public Health
- Researcher, Julia Bidonde, National Institute of Public Health
- Research librarian, Ingvild Kirkehei, National Institute of Public Health

We would like to thank research librarian Ingvild Kirkehei for developing the search strategy and for running the searches. We also would like to thank Kåre Birger Hagen, and Hege Kornør, both NIPH, for helpful comments on this report.

National Institute of Public Health, Division of Health Services Oslo, July 2019.

| | | |
|---|---|---|
| *Kåre Birger Hagen Specialist Director* | *Hege Kornør Deputy Department Director* | *Gerd M Flodgren Project leader* |

# Objective

The objective of this scoping review was to explore and map the evidence regarding part-time work (hereafter PT), including studies of effects and experiences, in the healthcare and community care services. The outcomes of interest relate to both patients/users as well as healthcare and community care personnel working directly with patients.

More specifically, we aimed to explore:

(i) What kind of publications are reporting effect and experiences of PT work, and what are the main outcomes reported?

(ii) What kind of PT work (definitions included), which occupational groups have been studied, and in which locations and settings have the studies been conducted?

(iii) Have any limitations or challenges of PT work been reported in the published literature?

# Background

There is a shortage of nurses in Norway as well as globally, and adding to this problem is the large number of healthcare personnel who work part-time (PT) (2, 3). Little is known about the consequences of having a high proportion of PT personnel working directly with patients in the health- and community-care services. For the purpose of this scoping review, the term *healthcare personnel* refers to any type of staff who work directly with patients (e.g. any type of nurses, assisting personnel, physicians, including personnel working in the community care services). Patients are people receiving primary or secondary healthcare, while users are people receiving community care, for example, residents in long-term care facilities. Both groups may include relatives and caregivers.

## Description of the problem

There is no universal definition of PT work. The Organisation for Economic Co-operation and Development have, for the purpose of international comparisons, suggested a definition of PT work based on a 30 usual hours threshold (4).
In Norway, there is a situation with a high proportion of personnel working PT in the healthcare and the community care services. In 2017 only 40-43% of nurses in the community care services and the healthcare services worked full-time (5). An additional problem, is that PT personnel in the community care services often are less skilled or unskilled (6). We have defined *healthcare services* as organisational entities that provides inpatient or outpatient testing or treatment of human disease or dysfunction; dispensing of drugs or medical devices for treating human disease or dysfunction". We have defined community care as "the provision of health (and social care) services outside of hospital to older people and people with learning disabilities or mental illness, to enable them to live as independently as possible in their own homes or elsewhere in the community".

There is large variation in the proportion of PT employees across different communities in Norway. In 2015 only 30% of healthcare personnel worked PT in the Oslo area, which can be compared with almost 70% in East-Agder (6). This may hypothetically have a negative effect on the continuity and quality of care, and result in differences in the quality of care that patients receive depending on where they live. But there may also be positive factors related to working PT, for example those who

work fewer clinical hours may experience less burnout, be more satisfied with their careers, be less likely to leave their jobs, and provide a better patient experience (7). We know very little about the consequences (effects and experiences) of having a high proportion of personnel working PT in the healthcare or the community care services. In Norway, there has in recent years been a focus on increasing the proportion of full-time positions in the healthcare services. Still, in December 2018 the proportion of PT employees was 64.4% in the community care services (8). It has been suggested that a high proportion of PT personnel may have a negative impact on the quality and the continuity of care provided, and therefore also on patients' or user's perceived quality of care, and the experiences of healthcare personnel. There is therefore a need to gain more knowledge about the existing evidence of the effects and experiences of PT work on patients and users (e.g. quality of life, patient safety, satisfaction with care), as well as on the healthcare personnel themselves (e.g. job satisfaction, job engagement, burnout). We have used the World Health Organisation's (WHO) definition of quality of care, which is "the extent to which healthcare services provided to individuals and patient populations improve desired health outcomes. In order to achieve this, health care must be safe, effective, timely, efficient, equitable and people-centred." (9). We have also used WHO's definition of patient safety according to which: «Patient safety is the prevention of errors and adverse effects to patients associated with healthcare» (10).

## Why is it important to do this scoping review

The Directorate of Health seeks more knowledge about how PT work affects the users/patients, as well as the personnel who works PT, positively or negatively, in order to fulfil their role of professional advisor in terms of needs, solutions and tools in the personnel field. This scoping review will assist the Directorate of Health in their work on the 'Kompetanseløft 2020' project, by providing a systematic mapping of evidence on the effect and experiences of PT work in the healthcare and community care services, both from the perspective of patients and healthcare personnel.

We conducted a preliminary search for existing scoping and other reviews on the topic, in the following databases: Cochrane library, Campbell library, Google Scholar, Swedish Agency for Health Technology Assessment and Assessment of Social services (SBU), and in Epistemonikos. A Cochrane review published in 2011 (11) evaluated the effects of different nurse staffing models, but did not look specifically on effects or experiences of PT work. We however found no scoping or systematic reviews on the topic.

# Method

We have addressed our research objectives by conducting a scoping review. This scoping review has been guided by the methodology manual published by the Joanna Briggs Institute for scoping reviews (12). We had initially planned to produce two reports, i.e. one covering issues related to the patient/user and one focusing on care personnel, but since too few studies including patient outcomes were found, we have reported results for patients/users and personnel in the same review. There is no international accepted definition or purpose for a scoping review, but one of its core characteristics is that it provides an overview of a broad topic (13).

The protocol for the scoping review was drafted and discussed with our commissioner, and was published on the NIPH website (14). We have followed the recently published PRISMA-ScR reporting checklist when developing the protocol and conducting the review (15).

## Literature search

A research librarian (JK) performed a systematic search in January 2019, in the following databases:

- Cochrane Central Register of Controlled Trials (CENTRAL)
- Cochrane Database of Systematic Reviews
- MEDLINE (Ovid)
- Embase (Ovid)
- PsychInfo (Ovid)
- SveMed+
- HTA database (via CRD)
- Cumulative Index of Nursing and Allied Health Literature (CINAHL, via Ebsco)
- Epistemonikos
- ISI Web of Science
- Sociological Abstracts (ProQuest)
- Social Services Abstracts (ProQuest)
- International Clinical Trials Registry Platform /ICTRP)xxxx

We started with a scoping search to identify possibly relevant systematic reviews. We then developed the search strategy based on input from the project group as well as language and index terms used in already identified relevant studies. Another librarian (Gyri Hval Straumann) performed a peer review of the final search strategy, and thereafter we ran the search in all databases.

The search consisted of text words and index terms describing health personnel (in general or specific, eg. *health personnel or nurse* or clinician**) and words typically used to describe part-time work (e.g. *part-time or parttime*). The search was, after discussion with the commissioners, limited to publication date as of 2000, as they did not expect earlier publications to be of relevance for current conditions.. We did not have any limitations to study design.

In addition to the systematic search, we browsed the publication lists of the *Norwegian Institute of Public Health database* (https://www.fhi.no/en/ ), the Swedish *Agency for Health Technology Assessment and Assessment of Social Services database* (https://www.sbu.se/sv/publikationer/), and the Danish *Nationale Forskning og Analysecenter for Velferd* (https://vive.dk/).

We have provided all the search strategies in Appendix 1.

## Inclusion criteria

We considered studies of any study design (i.e. systematic reviews, randomised studies, non-randomised studies, observational studies, qualitative studies etc.) for inclusion. The PICCO (Population, Intervention, Comparator, Context, Outcomes) eligibility criteria for our scoping review were as follows:

| | |
|---|---|
| **Population:** | *Patients/users:* Any patient, or user, with any health condition(s), receiving care in a healthcare setting, in the community (e.g. residents in care homes/long term care facilities), or in their own home, and the relatives or caregivers.<br>*Personnel*: Any type of healthcare personnel working directly with patients (e.g. nurses, physicians, assisting personnel, physiotherapists etc.), in any care setting (as per above). |
| **Intervention:** | Any study that provide relevant information regarding PT work (including effect and experiences) in the healthcare services or in the community care services. Evaluation studies were included independently of duration of intervention and follow up. |
| **Comparison:** | Any comparator (e.g. settings with higher/lower proportion of PT personnel, number of work hours per week), but also studies without a comparator. |

| | |
|---|---|
| **Context:** | Any healthcare or community care setting in any high-income country. We followed the World Bank classification of "high-income economy" (16). |
| **Outcomes**: | We considered the following sets of outcomes:<br>*Patient/user outcomes:* Any objective patient or user outcome related to patient safety and quality of care (e.g. infections, pressure ulcers, falls), as well as outcomes related to the experiences of patients or users (e.g. satisfaction with care, quality of life).<br>*Personnel:* Any objective outcome related to the quality of care delivered by the care personnel (e.g. information failure, medication errors, malpractice), as well as outcomes related to the experiences of care personnel (e.g. job satisfaction, work engagement, motivation, burnout). |
| **Language**: | Studies written in any language |

## Exclusion criteria

Due to our short time-line (5 months), we excluded conference abstracts, protocols, textbook chapters, editorials, and opinion papers. We excluded publications from low- and middle-income countries, as these are less relevant for Norwegian conditions. We also excluded studies focusing on administration, scheduling, recruitment, retention, feasibility, pension schemes and policy implementation.

If we had identified a sufficient number of quantitative studies conducted in the community care services where the proportion of PT personnel is the highest (e.g. care homes/ long term care facilities), we would have included these, and excluded studies conducted in other care settings (e.g. primary care). However, since we identified only a few eligible quantitative studies conducted in community care, we included studies conducted in any settings.

## Article selection

We downloaded all titles and abstracts retrieved by the electronic searches into the reference management program EndNote and removed duplicates. Two reviewers (GF and JB) independently screened the remaining titles and abstracts against the inclusion criteria, using the screening tool Rayyan (17). We obtained full text copies of potentially relevant references, and assessed these against the inclusion criteria. We resolved disagreements by discussion. We documented possible relevant references read in full text, and subsequently excluded, in a table along with the reasons for exclusion. See Appendix 2.

## Data items and data extraction process

One reviewer (GMF and JB) extracted data from each included study into a piloted data extraction form, and the second reviewer (GMF or JB) verified the correctness of the extracted data. We resolved disagreements through discussion.
We extracted the following data from the included studies:
Author(s); year of publication, country of origin (where the study was conducted), study design (e.g. randomized studies, non-randomised studies, or qualitative studies), study aims, concept or problem addressed, study population and sample size (if applicable), characteristics of personnel (e.g. time employed PT, occupation, education); definition of 'part-time' work, proportion PT employees, clinical work hours (if applicable), setting i.e. type of health-, or community-care setting; methods (e.g. tools used to assess outcomes), relevant details on intervention, and comparator (if applicable), outcomes reported, key findings that relate to the scoping review question, theory background (if applicable), and funding sources.

## Critical appraisal of individual sources of evidence

We did not assess the risk of bias of included studies, nor did we grade the certainty of the evidence from the included studies. This approach is in accordance with the conduct of scoping reviews (18).

## Synthesis of results

We explored what type of evidence (quantitative or qualitative) that was available on the topic of PT work in the health- and community-care services. We presented this evidence by mapping and charting the data. We described the type of PT work, and the definitions of PT work provided in the included studies. We further summarised the literature according to the type of participants, concept/problem addressed, outcomes reported, and settings of the studies.
Because this is a scoping review, there is no principal summary measure. We have however, on request from our commissioners, provided narrative summaries of the results (associations) of included studies, but no numerical results, which is in line with the reporting in scoping reviews in general. We have presented other results narratively (e.g. mean age, occupation/grade, proportion females working PT,), and where possible using descriptive statistics, (e.g. frequencies, percentages, and measures of dispersion). When possible, we presented the information in graphical forms (i.e. bar graphs, bubble plots, flow charts etc.).
We had in our qualitative analysis planned to identify dimensions of the experiences of PT personnel, as well as the experiences of patients/users of receiving care from PT personnel. We did, however, only find one qualitative study of PT nurses, and one of PT physician, this is why we could not perform the planned analysis. We have instead provided a descriptive summary of each study in Appendix 3.

# Results

## Search results

The search of the electronic databases yielded 3,258 citations after de-duplication. After duplicate screening of titles and abstracts, 3,194 of these citations were judged irrelevant and excluded. The remaining 64 references were retrieved and read in full text, after which 12 completely irrelevant references were excluded, and 29 references were excluded with reasons (Appendix 2). All these references were in English. We judged twenty-three studies to be eligible for inclusion (2, 19-30).

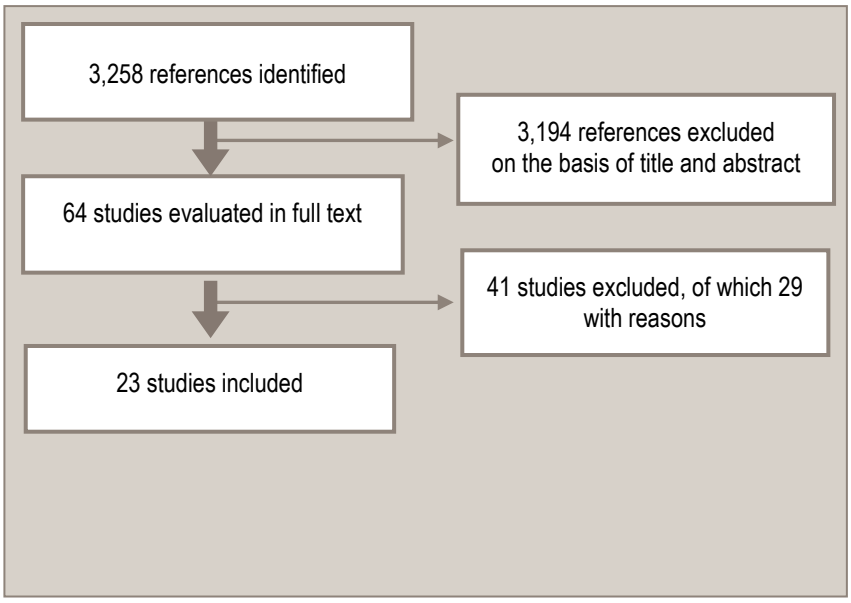


*Figure 1. PRISMA study flow chart (31)*

## Preliminary report of a sub-group of studies

Following our commissioner request, we have previously delivered a preliminary report of a sub-sample of three of the 23 included studies (29, 32, 33) that were set in the community care services (2 studies) or conducted in a Scandinavian country (Sweden) (32). These studies were selected as they were of special relevance for the Directorate of Health's work on the *Kompetanseløft 2020* project early May 2019

(1). In this final report, we describe and chart all 23 studies including those previously summarised.

## Description pf included studies

### Publication year, and type of publications

The 23 included studies were published between 2000 and 2018. Twenty-one studies were original publications, and two were literature reviews (19, 24). All studies were written in English (Fig 2; Appendix 4).

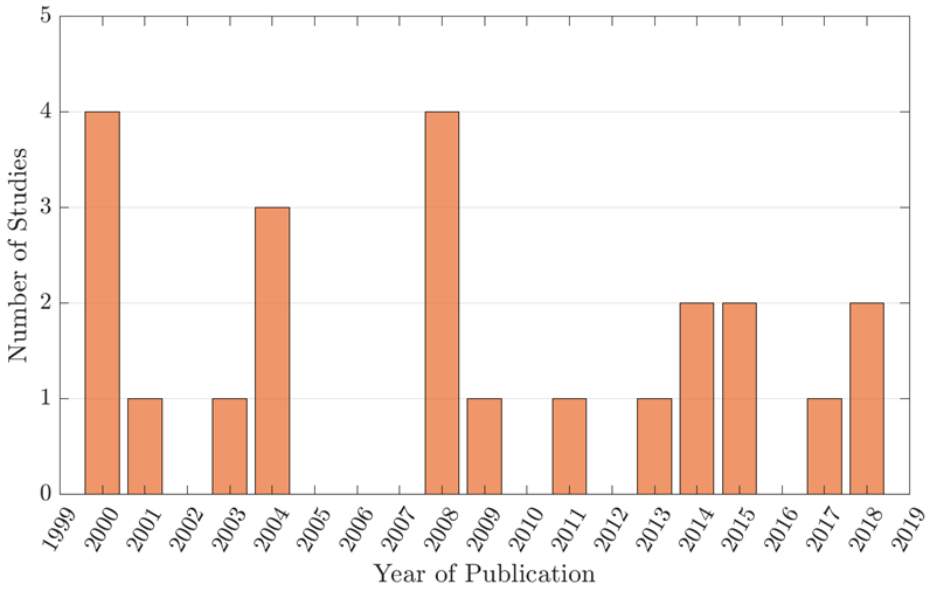


***Figure 2.*** *Publication year of included studies (N=23)*

### Location/country

Ten studies were conducted in the USA, four studies in Canada, four in Australia, and one study each in the Netherlands, Spain, Sweden, the UK and Israel respectively (Fig 3; Appendix 4).

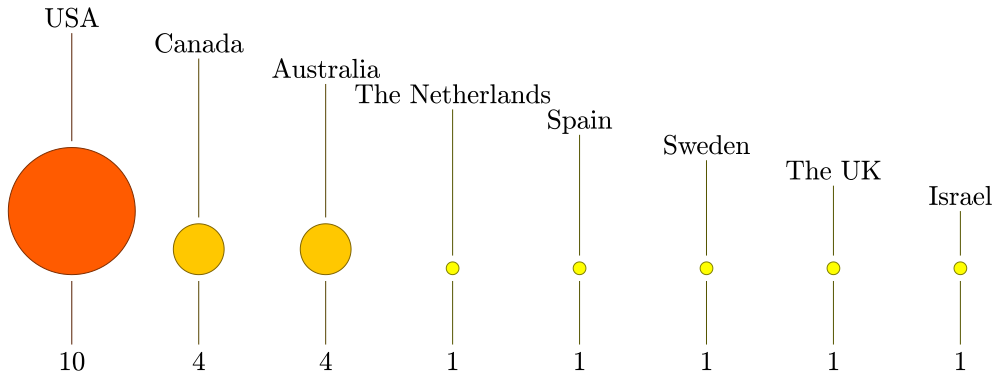

***Figure 3.*** *Location/country where the included studies had been conducted (N=23)*

## Study designs

Seventeen of the included studies had a cross-sectional study design, one was a cohort study (21), two studies had a qualitative study design (20, 23), one study had a mixed design (22), and two were literature reviews (19, 24). We identified no effect studies (i.e. randomised controlled trials, non-randomised controlled trials, interrupted time series studies, or controlled before after studies) (Fig 4; Appendix 4).

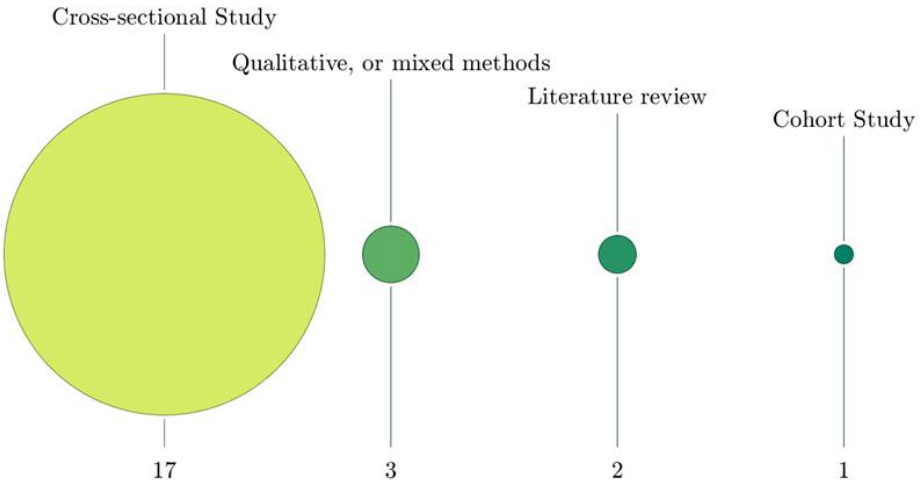


***Figure. 4.*** *Study designs of included studies (N=23)*

## Context/Setting

Six studies were located to hospitals, six to primary care clinics, two to general surgery clinics, and one study was located to veterans' affairs (VA) healthcare systems. One study was set in long–term care (LTC) homes, and one in the homes of residents. In four studies the setting was not defined (in one of these studies nurses were identified through a un-employment agency), and two studies were located to schools. A majority of studies of nurses were set in hospitals, and studies of physicians were mainly set in primary care (Fig 5; Appendix 4).

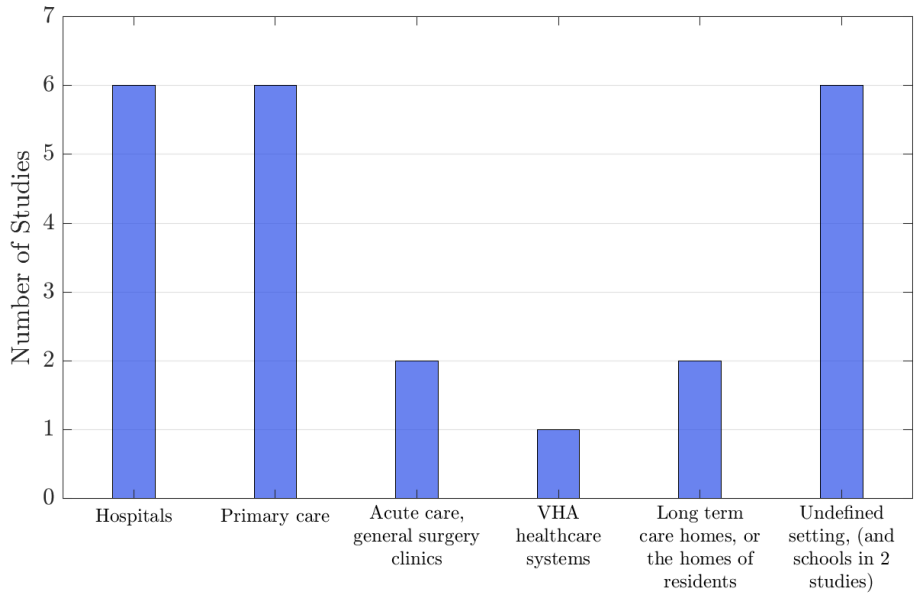


***Figure 5.*** *The context/ settings in the included studies (N=23)*

## Occupational groups

In 11 of the 23 included studies, the participating healthcare personnel were nurses (nurse practitioners, registered nurses), in 9 studies they were physicians (primary care physicians, anesthesiologists etc.). One study recruited medical staff (senior physicians, nurses and interns), and one study included home care workers (nurses, therapists and personal support workers) (Fig 6; Appendix 4).

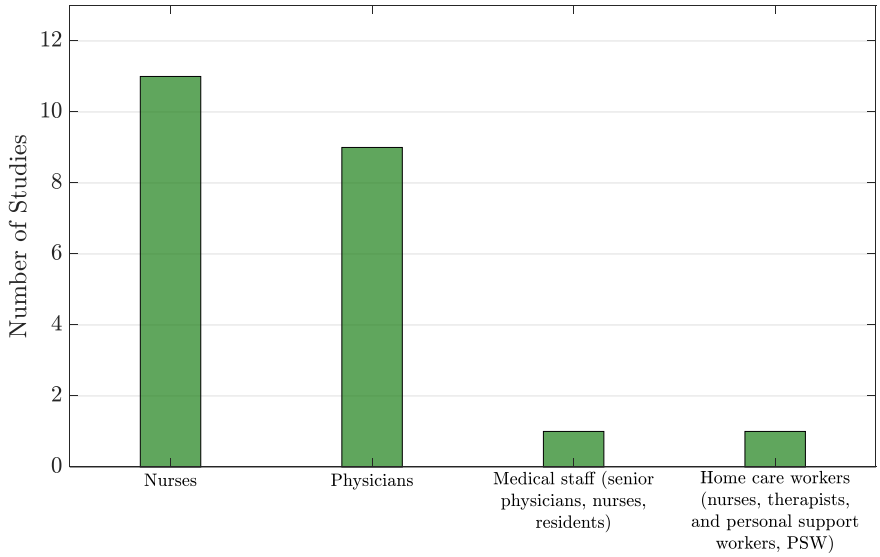


***Figure 6****. Type of occupational groups in the included studies (N=23)*

### *Demographic characteristics of occupational groups*

- The mean age ranged from 36 to 42 years in studies of nurses and from 43 to 49 years in studies of physicians, and was 44.9 years in the study of home care staff.
- The proportion of females is studies of nurses ranged from 85.7% to 100 %, and was 92% in the study of home care staff.
- The proportion of females who worked PT in studies of physicians ranged from 21% to 71 %.
- The number of participants ranged from 14 to 2,087 across studies of nurses and from 26 to 921 in studies of physicians. The number of participants was 441 in the study of home care staff, and 57 in the study of medical staff.
- The proportion of PT employees ranged from 14% to 57.3% in studies of nurses, from 8.5% to 80.4% in studies of physicians, constituted 35% in the study of home care staff, and ranged between 25 and 50% in the study of medical staff.
- Few of the included studies reported on marital status, or the proportion of personnel with children.
- Two studies of nurses reported level of highest education, and two reported license/ certification and/or specialty.
- Four studies of nurses reported years of occupational experience, one years with tenure, and one study reported hours of clinical work.
- A majority of studies of physicians targeted primary care physicians (PCPs), typically with a specialty in family medicine, internal medicine, or general practice. One study included anesthesiologists and one physicians with a specialty in internal medicine, surgery or radiology.
- One study of physcians reported type of registration, and one the proportion of board certified physicians. Two studies of physicians reported mean years in practice, one years with tenure, and one study reported hours of clinical work.
- There was little information on occupational characteristics in the two studies that included mixed occupations (home care workers and medical staff) (Appendices 5, 6).

## Outcomes reported in the included studies

Twenty–one of the included studies provided quantitative data, and two studies provided qualitative data (20, 23). The included studies reported a number of different outcomes, which also varied across occupational groups (Appendix 7).

### *Outcomes reported in studies of nurses*

The outcomes that were most frequently reported in the 11 studies of nurses were nurse satisfaction (3 studies; (30, 34, 35)), work outcomes like for example work incongruence (3 studies; (30, 32, 34)), outcomes related to psychological well-being e.g. emotional exhaustion, and burnout (3 studies; (2, 30, 32)). Some outcomes were reported in single studies e.g. satisfaction with physician collaboration, experiences

of handover, perceived professional competence, and job involvement. Three studies reported patient outcomes (27, 28, 36), i.e. experiences of care, access to school nurse, and school-days missed. In two of these studies, the patients were students visiting the school nurse (27, 28) (Fig 7; Appendix 7).

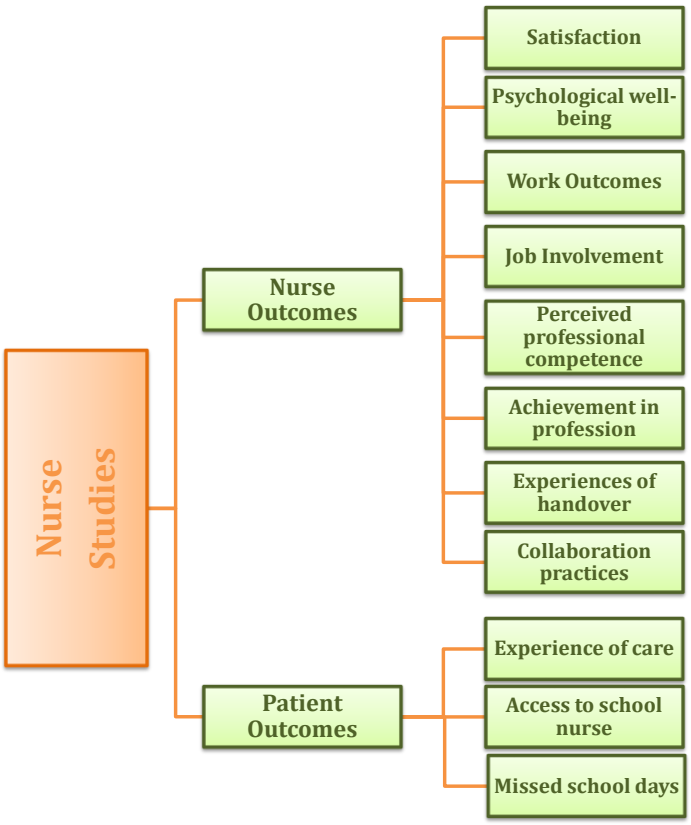


***Figure 7**. Outcomes reported in studies of nurses (N=11)*

### *Outcomes reported in studies of physicians*

In studies of physicians the most frequently reported outcomes were patient satisfaction (5 studies; (21, 37-40)), continuity and quality of care (5 studies; (21, 25, 38-40)), access, communication, clinical interaction with patients and trust (4 studies; (21, 25, 39, 40)), and physician outcomes and satisfaction (2 studies; (37, 38)). Some outcomes were reported in single studies e.g. communication and trust relationships (within teams of medical specialists), and clinical competence) (Fig 8; Appendix 7).

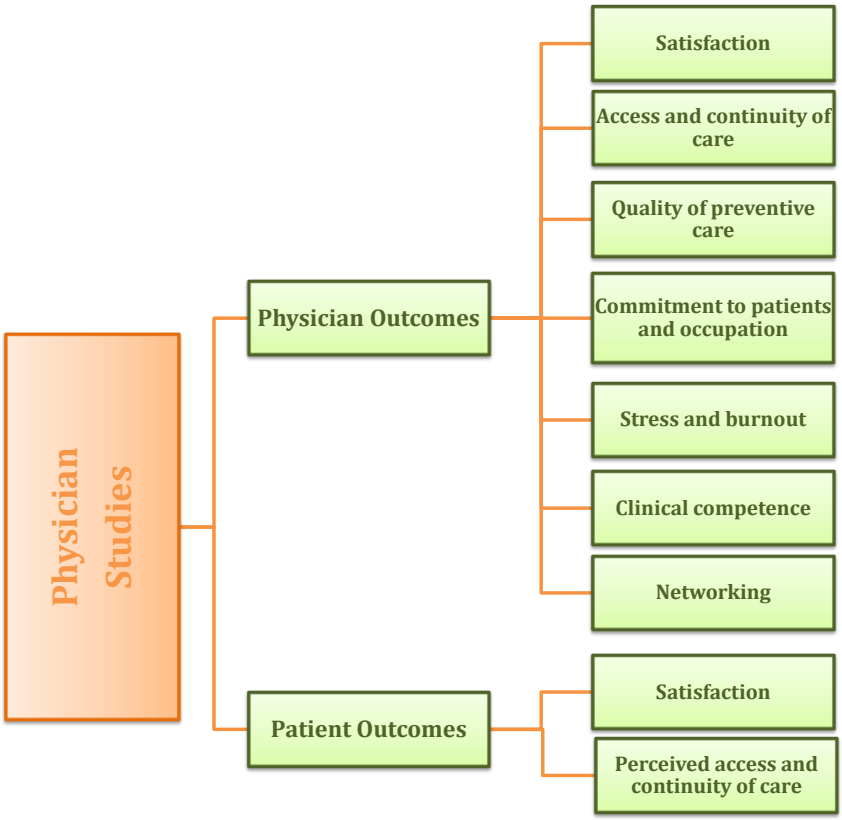


***Figure 8**. Outcomes reported in studies of physicians (N=9).*

### *Outcomes reported in studies of mixed occupations*

One study of medical staff reported patients' length of stay, mortality rate, urgent repeated hospitalisations, physician availability, speed of nurse response to patient nightly calls, frequency of clothing and bedding replacement, reception and release processes (41). One study of home care staff reported on stress symptoms (29) (Appendix 7).

## Data collection, study limitations, and funding sources

The time-period between data collection and publication of the included studies was one to 10 years in studies of nurses, 3-5 years in studies of physician, and 7-13 years in studies of mixed occupations.

The main limitation in a majority of the included studies was the cross-sectional study design, which makes it impossible to infer causality. Other limitations were for example unclear representativeness of samples, sometimes very small sample sizes, self-reported (surveys) data, old and possible outdated data (Appendix 8).

Fourteen studies reported the sources of funding (2, 20, 22, 25, 26, 28-30, 32, 34, 36-40) (Appendix 9).

### *Type and definition of PT work in the included studies*

Three of the 11 studies of nurses (23, 33, 36), and seven of the nine studies of physicians provided a definition of PT work (20-22, 24, 25, 38, 40).

The definitions of PT work provided in the three studies of nurses were as follows: working less than 75% of full time (FT) equivalent in one study (33), and working fewer than 35 hours per week in two studies (23, 36). These definitions may be the same if a FT equivalent (FTE) equals 40 hours per week.

In studies of physicians the definitions of PT work were as follows: (i) working six or fewer sessions per week (one session comprises four consecutive hours of patient contact) (20); (ii) <20 bookable hours per week (in ambulatory clinical practice) (21), (iii) or those spending <50% of their effort on nonclinical activities (21); (iv) 0.8 or less of FTE (22); (v) less than 40 hours a week (38); (vi) fewer than 10 sessions or 35 hours per week of patient appointment hours (40), (vii), in one study, PT work was based on patient panel size defined as 480 or fewer patients (corresponding to 4 half-day sessions/week) (25), and in one study the authors mentioned a national definition of PT work (< 35 h per week), but also stated that for physicians it was difficult to define PT, as physicians usually work more hours than the rest of the workforce (24) (Fig 9). Neither study of mixed occupations provided a definition of PT work.

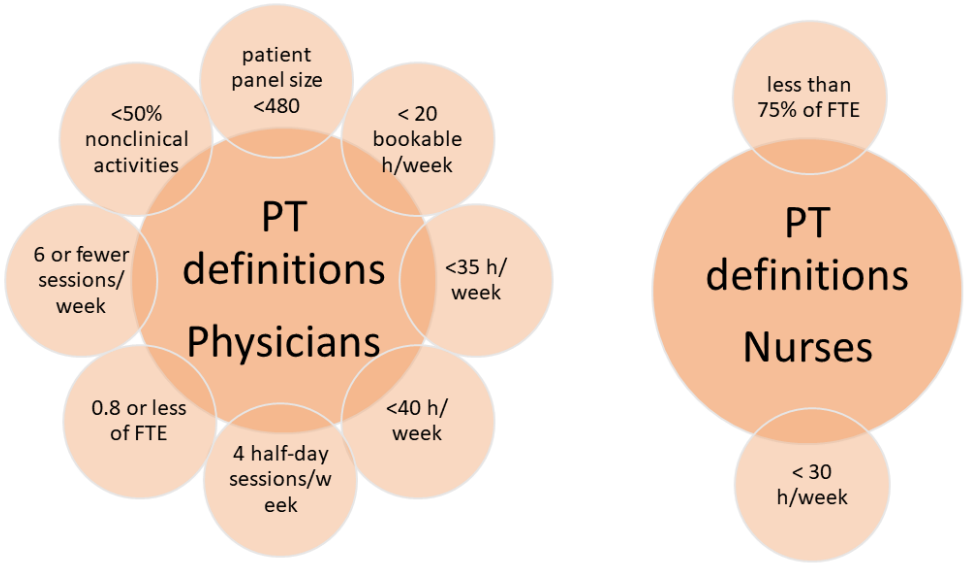


***Figure 9**. Definitions of PT work in studies of physicians (N=8), and in studies of nurses (N=3).Two studies of nurses used the same definition (<30 h/week).*

## Concepts/problems addressed in included studies

### *Studies of nurses*

Fig 10; Appendix 6 and 9.

*Forced PT work (work status incongruence)*

In three of 11 studies of nurses, focus was on work congruence issues (30, 32, 34).
One study examined the relationship between work status (FT or PT), and work status congruence, on work outcomes (including satisfaction), and psychological and physical well-being after restructuring for improved flexibility for the employer (30).
One study examined how forced PT employment (and PT unemployment) might affect PT nurses' general well-being, their attitudes towards the occupation, feelings of professional competence (32).
One study examined how re-organisation, involving forced work status change (and relocation of some nurses), might affect nurses' satisfaction and attitudes towards the occupation (34).

*Communication practices, and 'disconnection' of PT nurses*

One literature review explored whether the current appeal of PT and casual nursing is high, is conducive to satisfied nurses, well-functioning health care organizations and good nursing provision is questionable. In particular, this review focus is on the effectiveness of workplace communication for PT and FT (and casual) nurses, given the acknowledged importance of good communication to organizational success (19).
One study examined strengths and limitations in current hand-over practices, and differences in practice and perceptions of handover between PT and FT nurses (26).

*Beliefs that PT nurses provide poorer quality and continuity of care:*

One study explored the relationship between nurse staffing patterns and patients' experiences of care in larger hospitals with a particular focus on staffing flexibility (=staff employed PT) (36).

*Employment disadvantage*

One study examined the theoretical explanations of the employment disadvantage experienced by many female PT nurses. The authors raised the question whether PT nurses invest less in their career, and if so, whether this could be the cause to the experienced employment disadvantage, or if there are organizational, or other factors behind it (35).

*Shortage of nurses, and more nurses choosing to work PT*

One study examined nurses' reasons for working PT, comparing the satisfaction, experiences, psychological well-being, and work outcomes of nurses working PT with those of FT nurses, in an attempt to find ways to encourage these nurses to choose FT work (2).

*Lack of physicians in LTC homes*

One study explored the collaboration between nurse practitioners (NP) and physicians in LTC homes, after a new NP role had been introduced to improve availability and access to primary care (33).

*Access to and availability of school-nurses*
Two prospective studies examined how having a FT or a PT school-nurse in place, might affect access to healthcare (and number of schooldays lost) (27, 28).

*The realities of PT nursing*
This qualitative study explored and described phenomena of PT nursing, and aimed to construct theory that could explain the realities of PT nursing (23).

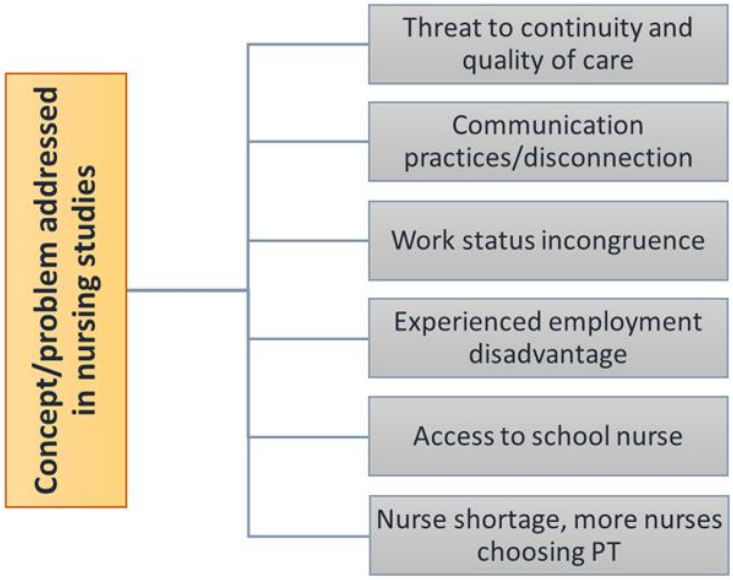


***Figure 10.*** *Concepts/problems addressed in studies of nurses (N=11)*

### *Studies of physicians*
Fig 11, Appendix 6 and 9.

*Access, continuity and quality of care:*
One study examined the association between continuity, access to care for PT and FT clinicians, and the satisfaction of their patients (39).
One study examined the relationship between PT, FT, overtime work (>65 hours/week) and patients' assessment of physicians in terms of seven essential elements of primary care (e.g. access, continuity, comprehensiveness, clinical interaction and trust) (38).
One study examined the impact of PT PCP availability on performance in current and alternate Veterans Health Administration (VHA) measures of urgent access (25).
One study explored whether decreased clinical time in direct patient care (as for PT physicians) would results in lower quality of performance (cancer screening and diabetic management) (40).
One retrospective cohort study examined PT PCP's compliance with screening guidelines (mammography, pap smears, and cholesterol measurements), and patient satisfaction (plus productivity, and resource utilization), as PT physicians have

been suggested to provide lower quality of care (and be less productive) that their FT colleagues (21).

Four studies explored whether patients who receive care from PT physicians are equally satisfied as those who receive care from FT physicians (21, 22, 38-40).

*Commitment to patients, and the profession*

One qualitative study explored physicians' reasons for working less than FT, and whether working PT reflects lack of commitment to the patients and the profession (20).

*Clinical competence*

One literature review study aimed to explore whether PT anesthesiologists are as competent as their FT colleagues, and whether or not reduced clinical hours may be a threat to the safety of patients (24).

*Networking- consultation, communication and trust relationships (among teams of medical specialists)*

One mixed methods study examined possible differences in informal work networks between PT and FT physicians, since it has been suggested that PT physicians may be more prone to information and communication errors that can jeopardize the quality of care and safety of patients (22).

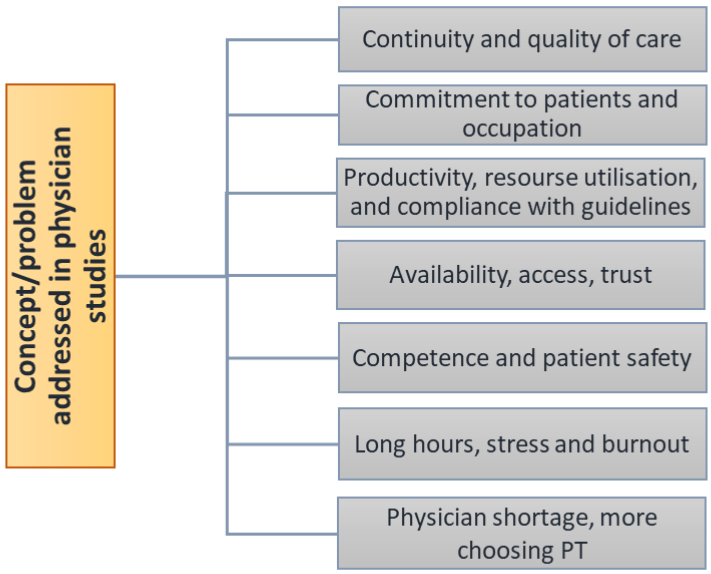


***Figure 11**. Concepts/problems addressed in studies of physicians (N=9)*

*Challenges to a changing workforce*

There are multiple challenges facing the medical workforce, one is a changing workforce, with more physicians choosing PT work, another is high rates of burnout. Physicians work long hours, but still need to keep both high quality and productivity.

One study explored the relationship between PT work status, work-place conditions and physician outcomes (37). One study examined the relationship between PT, FT and overtime work (>65 hours/week) and patients' assessment of physicians in terms of access, continuity, comprehensiveness, clinical interaction and trust (38).

### *Studies of mixed occupations*

*Stress caused by PT and/ or causal work contracts*

One study examined how non-standard work (i.e. PT or casual hours) and job insecurity might affect stress symptoms (and contribute to the development of musculoskeletal disorders) in home care staff (29).

*Commitment to work, and patients*

One study examined how PT medical staff might influence operational and medical performance. This was done because of the beliefs that PT medical staff may be less committed to their work, care less about their patients (and the department), and not be easily motivated (41). Medical performance was determined based on the patients' length of stay, mortality rate, and urgent repeated hospitalisations, and operational performance on physician availability scores, nurses speed of response to nightly patient calls, frequency of clothing and bedding replacement, reception and release process efficiency.

## Main narrative results

### *Results for studies of nurses*

See Appendix 10 for details

*Psychological well-being*

- One study reported that PT nurses with congruent work status (i.e. nurses who worked PT and wanted to work PT) tended to report the highest levels of psychological wellbeing (non-significant finding) (30).

*Satisfaction*

- One study reported similar satisfaction for PT nurses with congruent and incongruent work status, post re-organisation (34).

*Committment to work*

- One study reported that PT nurses generally report lower levels of involvement, affective commitment, and work engagement as compared to FT colleagues (2). The same study also report that PT nurses had lower levels of job resources (i.e. autonomy and self-development opportunities) (2) .
- One study reported that female PT nurses do not 'invest less' in their careers than FT nurses, in terms of qualifications and experience (35).

*Disconnection, and self-confidence*

- One qualitative study reported that PT nurses perceive that they are unable to achieve their personal optimal nursing potential, and that PT is linked to a

disconnection within the workplace and challenges in the provision of client care (23).
- One study reported that nurses who had been forced into PT employment were feeling less self-confident, and some expressed a lack of professional experience, even if most nurses did not feel anxious about working within their area of competence (32).

*Communication and collaboration*

- In one study PT and FT NPs reported equally high satisfaction with physician collaboration in LTC homes (33).
- One study reported significant differences in the experiences of handover (duration, location, method) between PT and FT nurses, but it was unclear if the results were indicative of a beneficial or non-beneficial outcome (26).

*Patient experiences*

- One study reported that a higher proportion of PT nurses is associated with positive patients' experiences (36).

*Visits to school-nurse, lost school days*

- One study reported significantly fewer student visits to the school nurse office (interpreted as poorer access) in schools with PT nurses as compared to schools with FT nurses (28).
- One study reported that students with asthma who were poor or who were African-American missed more days in schools with PT nurses (due to poor access) than did their counterparts in schools with FT nurses (27).

***Results for studies of physicians***

*Quality of care*

- One study reported significantly higher rates of cancer screening and diabetic management (compliance with guidelines/quality of preventive care) in PT physicians (40).
- One study reported that PT PCPs are at least as efficient as their FT colleagues, and that the quality of their work is similar (21).
- One study reported equal performance of PT and FT physicians in most aspects of care as experienced and reported by patients, e.g. access, continuity, comprehensiveness, trust (38).

*Access and continuity of care*

- One study reported that PT physicians were associated with poorer access and continuity of care (but better patient satisfaction as per above) (39)
- One study reported poorer same-day access to patients' usual PCP when the usual PCP worked PT (25).
- One study reported similar clinic level same-day access, same-week access to the usual PCPs, and overall continuity of care for patients of PT and FT PCPs (25). It should however be noted, that measures of in-person access to a

usual PCPs do not capture alternate access approaches, which often are used by PT providers, such as team-based on non-face-to-face care.

*Satisfaction (personnel and patients)*

- One study reported that PT PCPs are more satisfied, and experience better work control and less burnout than FT PCPs (but experience similar work stress) (37).
- Two studies reported better patient satisfaction scores for PT physicians than for FT physicians (39).
- Four studies reported equally high satisfaction in patients of PT physicians as in patients of FT physicians. (21, 37, 38, 40).

*Committment to patients and profession*

- One qualitative study reported high commitment to patients and the profession in PT physicians (20).

*Communication and collaboration*

- One study reported that the strength of trust relationships (within the clinical team) was equally high for PT and FT physicians (22) .
- One study reported no impact of PT work on the size of informal work-related networks of physicians, but lower frequency of communication contacts in mixed teams (with PT physicians), and lower efficient reachability (ability to reach efficiently) in PT physicians. The intended trust relationship (intention to share confidential materials) was equally strong n PT and FT physicians (22).

*Committment to patients and profession*

- One qualitative study reported high commitment to patients and the profession in PT physicians (20).

*Clinical Competence*

- One literature review reported that the effect of reduced clinical hours on the compentence of anesthesiologists, and on the outcomes of their patients are unknown (24).

### *Results for mixed occupations*

*Medical and operational performance*

- One study reported that patients' length of stay, mortality rate, and urgent repeated hospitalisations, was equally good (or better) in medical teams with PT personnel as compared to teams with FT staff only. Physician availability scores, nurses speed of response to nightly patient calls, frequency of clothing and bedding replacement, reception and release process efficiency) appeared to be worse in mixed teams that included PT staff (41).

*Stress symptoms*

- One study reported that PT work (and casual work hours) and job insecurity were associated with stress symptoms in home care staff (29).

# Discussion

In this systematic scoping review, we have provided an overview of the existing evidence of the effect and experiences of PT work related to the quality and safety of patient care in the health- and community-care services. Twenty-three studies, covering a number of different aspects of PT work. were included in the review. Most of them were original studies published between 2000 and 2018.

Only associations were reported in the included studies, which were mostly cross-sectional, and no study included effect as an objective/outcome. We cannot therefore infer cause and effect relations from the results. In addition, many of the results were based on self-report, which is more prone to bias than objectively measured outcomes.

A majority of studies were conducted in the USA, and it is questionable whether results from American studies can be generalised to Norwegian conditions, since the healthcare systems are so different.

Studies targeting either nurses or physicians, or both, dominated the field. Only one study included home care personnel. No study included other occupational groups like for example nurse or physician assistants, nurse aides, nurse auxiliaries etc.

The proportion of PT employed personnel, varied widely across studies, and was higher in studies of physicians. One explanation to this probably lies in differences in what is counted as PT work (only clinical hours, or all hours). While many physicians can work less than FT in the clinic, they often have additional duties, administrative or academic, that in total make up to FT employment. More female physicians worked PT, which may indicate that female physicians guard their work-life balance to a greater degree than their male colleagues do.

The definitions of PT work used in included studies varied widely, which hampers any comparisons across studies. While a majority of studies of physicians provided a definition of PT work, only a few of studies of nurses did. In addition, definitions of PT varied more across studies of physicians, which may be due to difficulties relating PT work in physicians to the 'normal' PT work-hours (usually less than 35 hours a week), as many physicians work longer hours than the rest of the work-force.

Studies of nurses were typically hospital based, while studies of physicians typically took place in the primary care setting. Very few studies were set in community care services, which was the setting of main interest for this scoping review. It is difficult

to say why PT work in the community care services, where the proportion of PT employees is the highest, are less studied, but may possibly reflect that they for some reason are considered lower priority than acute and primary care.

The concepts/problems addressed varied across included studies and occupations, and some were specific to a specific occupation. For example, while three studies of PT nurses were concerned with work status incongruence, none of the studies of physicians addressed this issue. Forced PT work thus appear to be a problem that mainly concern nurses. Some problems were addressed only in studies of physicians e.g. quality of care, and clinical competence.

The outcomes reported varied widely across studies and occupations. None of the safety and quality of care outcomes listed in our protocol (e.g. infections, pressure ulcers, information failure, medication errors) were reported in any of the included studies. Most outcomes were related to the healthcare personnel, and few were patient outcomes. Surprisingly, patient satisfaction was only reported in studies of physicians.

Since this is a scoping review, we did not provide a comprehensive results summary, but a descriptive presentation of the results. A result that was consistent across a number of studies was equally good (or better) satisfaction for PT nurses and physicians, and their patients, as compared to their colleagues who worked FT. However, the results reported in this scoping review should be interpreted with extreme caution, since they are mainly based on data from cross-sectional studies.

## Limitations with the included studies

A major limitation with the included studies was the dominance of studies with cross-sectional study designs (and lack of effects studies), which makes it impossible to make inferences of cause and effect. Examples of other limitations are the use of old and possibly outdated data, unclear representativeness of samples, small samples, and single locations, which may lessen the generalisability of the results.

## Strengths and limitations with this scoping review

An experienced information specialist developed the search strategy with input from the authors, and conducted a comprehensive search in 14 electronic databases. We reduced the risk of bias through duplicate and independent screening, and data-extraction. We did not assess the risk of bias, or grade the certainty of evidence of included studies, but this was a conscious choice, and in line with the described conduct of many other scoping reviews (12). Due to the short time-frame for this report, we limited inclusion to original papers and reviews, and we therefore cannot exclude the possibility that we may have missed some relevant studies. We however believe that the risk for having missed large important studies is relatively low.

# Conclusion

This scoping review shows a field with a lack of effect studies, a large variation in the definitions of PT work used, the concepts/problems addressed, as well as in the outcomes reported. This field is dominated by cross-sectional studies, nurse or physician participants, hospital or primary care based studies, of which a majority were conducted in North-America. Heterogeneous studies and a lack of a standardised definition of part-time work, hampers any attempt to pool, or compare, results across studies and therefore limits our current understanding of effect and experiences for healthcare professionals and also patients/users.

## Need for further research

The currrent evidence for effect and experiences of PT work related to quality of care and patient safety in the health- and community-care services is weak, as robust effect studies are lacking, and the qualitative studies are few. There is a need for studies of PT work conducted in the community care services, where the proportion of PT personnel is the highest, and maybe also of other healthcare personnel than nurses and physicians. Further, studies should also assess outcomes directly related to quality of care and patient safety (e.g. infections, pressure ulcers, falls, information failure, medication errors, malpractice).
Future studies should also aim to use a standardized definition of PT work to enable comparisons across studies, and use robust study designs to assess the effects of PT work on both patients and personnel e.g. when a new nursing- or physician-team model is put in place thus making a comparison of settings with different proportion of PT personnel possible. or comparing outcomes in the same setting(s) before and after an intervention has taken place using an interrupted time series design.

This evidence is current as of January 2019.

# References


1. Helsedirektoratet. Kompetanseløft 2020 Norway: Helsedirektoratet; 2019 [Available from: https://www.helsedirektoratet.no/om-oss/forsoksordninger-og-prosjekter/kompetanseloft-2020.
2. Burke J, Dolan, S., Fiksenbaum, L. Part-time versus full-time work: an empirical evidence-based case of nurses in Spain. Evidence-based HRM. 2014;2(2):176-91.
3. International Council of Nurses. The Global nursing Shortage::Priority Areas for Intervantion: WHO; 2019 [
4. van Bastelaer A, Lemaître, G, Marianna, P The Definition of Part-Time Work for the Purpose of International Comparisons. 1997. Contract No.: 22.
5. Sykepleierforbund N. Statistikk: Gjennomsnittslønn, lønnsvekst, og antall årsverk 2018 [
6. SSB. Arbeidsskraftundersøkelsen Norway: SSB; 2015 [
7. Bodenheimer T, Haq C, Lehmann W. Continuity and Access in the Era of Part-Time Practice. Annals of Family Medicine. 2018;16(4):359-60.
8. KS' PAI register. Municipal employees in health, nursing and care Norway2018 [Available from: https://www.ks.no/contentassets/2186963dfdba48fba9ae2763a04bef3b/heltid-og-stillingsstorrelser-i-hpo.html.
9. WHO. What is quality of care and why is it important? : WHO; 2018 [
10. WHO. Patient safety: WHO; 2018 [
11. Butler M CR, Drennan J, Halligan P, O'Mathúna DP, Schultz TJ, et al,. Hospital nurse staffingmodels and patient and staff-related outcomes. Cochrane Database of Systematic Reviews. 2011(7).
12. Peters M GC, McInerney P, Soares C, Hanan K, Parker D The Joanna Briggs Institute Reviewers' Manual 2015: Methodology for JBI Scoping Reviews.: Joanna Briggs Institute; 2015.
13. Peterson J, Pearce PF, Ferguson LA, Langford CA. Understanding scoping reviews: Definition, purpose, and process. Journal of the American Association of Nurse Practitioners. 2017;29(1):12-6.
14. Flodgren G, Bidonde J. Effect and experiences of part-time work in the healthcare services - project description Norway: Norwegian Institute of Public Health; 2019 [Available from: https://www.fhi.no/en/cristin-projects/ongoing/effect-and-experiences-of-part-time-work-in-the-healthcare-services/.
15. Tricco A, Lillie, E, Zarin, W, O'Brien, KK, Colquhoun, H, Levac, D, et al. . PRISMA extension for scoping reviews (PRISMA-ScR): checklist and explanation. Ann Intern Med. 2018;169(7):467-73.
16. World Bank Data Team. New country classifications by income level: 2018-2019: The World Bank Group; 2019 [Available from: https://blogs.worldbank.org/opendata/new-country-classifications-income-level-2018-2019.
17. Ouzzan M, Hammady, H, Fedorowicz, Z, Elmagarmid, A Rayyan — a web and mobile app for systematic reviews. Systematic Reviews. 2016;5:210.
18. Tricco AL, E, Zarin, W, O'Brien, K, Colquhoun, H, Kastner, M et al. A scoping review on the conduct and reporting of scoping reviews. BMC medical research methodology. 2016;16:15-.
19. Batch M, Barnard A, Windsor C. Who's talking? Communication and the casual/part-time nurse: a literature review. Contemporary Nurse. 2009;33(1):20-9.
20. Dwan KM, Douglas KA, Forrest LE. Are "part-time" general practitioners workforce idlers or committed professionals? BMC Family Practice. 2014;15:154.

21. Fairchild DG, McLoughlin KS, Gharib S, Horsky J, Portnow M, Richter J, et al. Productivity, quality, and patient satisfaction - Comparison of part-time and full-time primary care physicians. Journal of General Internal Medicine. 2001;16(10):663-7.
22. Heiligers PJ, de Jong JD, Groenewegen PP, Hingstman L, Volker B, Spreeuwenberg P. Is networking different with doctors working part-time? Differences in social networks of part-time and full-time doctors. BMC Health Services Research. 2008;8:204.
23. Jamieson LN, Williams LM, Lauder W, Dwyer T. The 'realities' of part-time nursing: a grounded theory study. J Nurs Manag. 2008;16(7):883-92.
24. McIntosh CA, Macario A. Part-time clinical anesthesia practice: a review of the economic, quality, and safety issues. Anesthesiology Clinics. 2008;26(4):707-27, vii.
25. Rosland AM, Krein SL, Kim HM, Greenstone CL, Tremblay A, Ratz D, et al. Measuring patient-centered medical home access and continuity in clinics with part-time clinicians. American Journal of Managed Care. 2015;21(5):e320-8.
26. Street M, Eustace P, Livingston PM, Craike MJ, Kent B, Patterson D. Communication at the bedside to enhance patient care: A survey of nurses' experience and perspective of handover. International Journal of Nursing Practice. 2011;17(2):133-40.
27. Telljohann SK, Dake JA, Price JH. Effect of full-time versus part-time school nurses on attendance of elementary students with asthma. Journal of School Nursing. 2004;20(6):331-4.
28. Telljohann SK, Price JH, Dake JA, Durgin J. Access to school health services: differences between full-time and part-time school nurses. Journal of School Nursing. 2004;20(3):176-81.
29. Zeytinoglu IU, Denton M, Plenderleith J, Chowhan J. Associations between workers' health, and non-standard hours and insecurity: The case of home care workers in Ontario, Canada. The International Journal of Human Resource Management. 2015;26(19):2503-22.
30. Burke RJ, Greenglass ER. Work status congruence, work outcomes and psychological well-being. Stress Medicine. 2000;16(2):91-9.
31. Moher D, Liberati A, Tetzlaff J, Altman DG. Preferred reporting items for systematic reviews and meta-analyses: the PRISMA statement. PLoS medicine. 2009;6(7):e1000097.
32. Kapborg I. Swedish nurses' experiences of being forced into part-time employment. Nursing & Health Sciences. 2000;2(4):173-7.
33. McAiney CA, Ploeg J, Wickson-Griffiths A, Kaasalainen S, Martin-Misener R, Akhtar-Danesh N, et al. Perspectives of Nurse Practitioner-Physician Collaboration among Nurse Practitioners in Canadian Long-Term Care Homes: A National Survey. Nursing leadership (Toronto, Ont). 2017;30(4):10-25.
34. Keil JM, Armstrong-Stassen M, Cameron SJ, Horsburgh ME. Part-time nurses: The effect of work status congruency on job attitudes. Applied Psychology: An International Review. 2000;49(2):227-36.
35. Lane N. Women and part-time work: The careers of part-time NHS nurses. British Journal of Management. 2004;15(3):259-72.
36. Oppel EM, Young GJ. Nurse Staffing Patterns and Patient Experience of Care: An Empirical Analysis of U.S. Hospitals. Health Services Research. 2018;53(3):1799-818.
37. Mechaber HF, Levine RB, Manwell LB, Mundt MP, Linzer M. Part-time physicians... prevalent, connected, and satisfied. Journal of General Internal Medicine. 2008;23(3):300-3.
38. Murray A, Safran DG, Rogers WH, Inui T, Chang H, Montgomery JE. Part-time physicians - Physician workload and patient-based assessments of primary care performance. Archives of Family Medicine. 2000;9(4):327-32.
39. Panattoni L, Stone A, Chung S, Tai-Seale M. Patients report better satisfaction with part-time primary care physicians, despite less continuity of care and access. Journal of General Internal Medicine. 2015;30(3):327-33.
40. Parkerton PH, Wagner EH, Smith DG, Straley HL. Effect of part-time practice on patient outcomes. Journal of General Internal Medicine. 2003;18(9):717-24.
41. Kogan K, Panizel R, Perlman Y. Part-time practice in healthcare: Impact on operational versus medical performance. Health Marketing Quarterly. 2018:1-15.
42. Bodenheimer T. Coordinating care--A perilous journey through the health care system. The New England Journal of Medicine. 2008;358(10):1064-71.
43. Burke RJ. Work status congruence, work outcomes, and psychologic well-being. Health Care Manager. 2004;23(2):120-7.

44. Engkvist IL, Kjellberg, A., Wigaeus, H. E., Hagberg, M., Menckel, E., Ekenvall, L. Back injuries among nursing personnel - Identification of work conditions with cluster analysis. Safety Science. 2001;37(1):1-18.
45. Enos G. In-house technological expertise becomes more critical for centers. Alcoholism & Drug Abuse Weekly. 2015;27(16):1-8.
46. Ersek M, Sefcik JS, Lin FC, Lee TJ, Gilliam R, Hanson LC. Provider staffing effect on a decision aid intervention. Clinical Nursing Research. 2014;23(1):36-53.
47. Glauser W. Part-time doctors - reducing hours to reduce burnout. CMAJ Canadian Medical Association Journal. 2018;190(35):E1055-E6.
48. Grossman K, Parise C, Khan E. Productivity of Part-Time versus Full-Time Primary Care Physicians. Journal of Medical Practice Management. 2018;33(6):383-8.
49. Haggerty JL, Pineault R, Beaulieu MD, Brunelle Y, Gauthier J, Goulet F, et al. Practice features associated with patient-reported accessibility, continuity, and coordination of primary health care. Annals of Family Medicine. 2008;6(2):116-23.
50. Hamadi HY. Analysis of risk factors contributing to home-based direct care workers (DCWS) occupational injury in long-term care. Dissertation Abstracts International: Section B: The Sciences and Engineering. 2015;76(1):No Pagination Specified.
51. Havlovic SJ, Lau, D.C, Pinfield, LT. Repercussions of work schedule congruence among full-time, part-time, and contingent nurses. Health Care Management Review. 2002;27(4):30-41.
52. Huang IA, Tuan PL, Jaing TH, Wu CT, Chao M, Wang HH, et al. Comparisons between Full-time and Part-time Pediatric Emergency Physicians in Pediatric Emergency Department. Pediatrics & Neonatology. 2016;57(5):371-7.
53. Ingstad K, Hedlund M. Part-time or Full-time Employment: Choices and Constraints. Nordic Journal of Working Life Studies. 2017;7(4):73-89.
54. Ingstad K, Kvande E. Does Nursing Have to Be a Part-Time Profession? Nordic Nursing Research / Nordisk Sygeplejeforskning. 2011;1(3):206-18.
55. Jamieson LN, Williams LM, Lauder W, Dwyer T. Nurses' motivators to work part-time. Collegian: Journal of the Royal College of Nursing, Australia. 2007;14(2):13-9.
56. Lachish S, Svirko E, Goldacre MJ, Lambert T. Factors associated with less-than-full-time working in medical practice: results of surveys of five cohorts of UK doctors, 10 years after graduation. Human Resources for Health [Electronic Resource]. 2016;14(1):62.
57. Levine RB, Harrison RA, Mechaber HF, Phillips C, Gallagher TH. Professional characteristics and job satisfaction among SGIM members: a comparison of part-time and full-time physician members. Journal of General Internal Medicine. 2008;23(8):1218-21.
58. Lugtenberg M, Heiligers PJ, de Jong JD, Hingstman L. Internal medicine specialists' attitudes towards working part-time: a comparison between 1996 and 2004. BMC Health Services Research. 2006;6:126.
59. Mallette C. Nurses' work patterns: Perceived organizational support and psychological contracts. Journal of Research in Nursing. 2011;16(6):518-32.
60. Menashe SJ, Parisi MT, Chapman T, Stanescu AL, Wright JN, Otto RK, et al. Part-time pediatric radiology: The realities and perceptions of part-time employment in the academic setting. American Journal of Roentgenology. 2018;211(5):971-7.
61. McGillis Hall L, McMahon A. Nursing workforce research. Journal of Research in Nursing. 2011;16(6):485-6.
62. Milanese JA. Relationships between direct care registered nurse perception of empowerment, occupational commitment and intent to stay in an acute care hospital: Dowling College; 2013.
63. Naghneh MHK, Tafreshi MZ, Naderi M, Shakeri N, Bolourchifard F, Goyaghaj NS. The relationship between organizational commitment and nursing care behavior. Electron Physician. 2017;9(7):4835-40.
64. Nygaard HA. Physicians' services in nursing homes - part-time or full-time? Demens & Alderspsykiatri. 2011;15(1):30-3.
65. Schmit Jongbloed LJ, Cohen-Schotanus J, Borleffs JCC, Stewart RE, Schonrock-Adema J. Physician job satisfaction related to actual and preferred job size. Bmc Medical Education. 2017;17:9.
66. Schott S, Lermann J, Eismann S, Neimann J, Knabl J. Part-time employment of gynecologists and obstetricians: a sub-group analysis of a Germany-wide survey of residents. Archives of Gynecology & Obstetrics. 2017;295(1):133-40.

67. Swami M, Gravelle H, Scott A, Williams J. Hours worked by general practitioners and waiting times for primary care. Health Economics. 2018;27(10):1513-32.
68. Thomas NI, Brown ND, Hodges LC, Gandy J, Lawson L, Lord JE, et al. Factors associated with work-related injury among hospital employees: a case-control study. AAOHN Journal. 2006;54(1):24-31.
69. Vinod SK, Jalaludin BB, Rodger A, Turner S, Kelly L, Thornton D, et al. Part-time consultants in radiation oncology. Australasian Radiology. 2002;46(4):396-401.

# Appendices

## Appendix 1. Full search strategies

**Search strategies**
Publications published before 2000 were removed in EndNote

Search hits total (after removing publications published before year 2000): 5290
Search hits total after duplicate removal: 3265

**MEDLINE (Ovid)**
Date of search: January 17 2019

MEDLINE(R) and Epub Ahead of Print, In-Process & Other Non-Indexed Citations and Daily 1946 to January 15, 2019
Search hits: 2335 (2328 after Ovid duplicate removal)

1. exp Health Personnel/ or (((health* or medical* or nursing or clinical) adj3 (personnel or staff or employ* or care provider* or worker* or assistant* or practitioner*)) or nurse* or physician* or general practition* or doctor* or clinician* or therapist* or physiotherapist* or dentist* or psychiatrist* or surgeon* or assisti* personnel or care assistant* or (home adj2 aid*) or family practitioner*).tw.
2. ((part-time or parttime or half-time or halftime or (reduc* adj3 hour*) or (few* adj2 hours*)) adj10 (job* or work* or staff* or employ* or occupation* or contract* or position* or practice* or shift* or vacanc*)).tw,kw.
3. 1 and 2
4. ((part-time or parttime or half-time or halftime or reduc* hours*) and (((health* or medical* or nursing or clinical) adj3 (personnel or staff or employ* or care provider* or worker* or assistant*)) or nurse* or physician* or general practition* or doctor* or clinician* or therapist* or physiotherapist* or dentist* or psychiatrist* or surgeon* or assisti* personnel or care assistant* or (home adj2 aide*) or family practitioner*)).ti.
5. 1 and (part-time or parttime or half-time or halftime or (reduc* adj3 hours*)).tw. and ("personnel staffing and scheduling"/ or employment/)
6. ((part-time or parttime) adj4 (((health* or medical* or nursing or clinical) adj3 (personnel or staff or employ* or care provider* or worker* or assistant* or practitioner*)) or nurse* or physician* or general practition* or doctor* or clinician* or therapist* or physiotherapist* or dentist* or psychiatrist* or surgeon* or assisti* personnel or care assistant* or (home adj2 aid*) or family practitioner*)).tw.

7. 3 or 4 or 5 or 6

8. (clinical conference or congress or congresses or editorial or letter).pt.

9. 7 not 8

**Embase (Ovid)**
Date of search: January 17 2019
Embase 1974 to 2019 Week 02
Search hits: 1372 (522 after Ovid duplicate removal)

1. exp *health care personnel/ or (((health* or medical* or nursing or clinical) adj3 (personnel or staff or employ* or care provider* or worker* or assistant* or practitioner*)) or nurse* or physician* or general practition* or doctor* or clinician* or therapist* or physiotherapist* or dentist* or psychiatrist* or surgeon* or assisti* personnel or care assistant* or (home adj2 aid*) or family practitioner*).tw.

2. parttime employment/ or ((part-time or parttime or half-time or halftime or (reduc* adj3 hour*) or (few* adj2 hours*)) adj10 (job* or work* or staff* or employ* or occupation* or contract* or position* or practice* or shift* or vacanc*)).tw,kw.

3. 1 and 2

4. ((part-time or parttime or half-time or halftime or reduc* hours*) and (((health* or medical* or nursing or clinical) adj3 (personnel or staff or employ* or care provider* or worker* or assistant* or practitioner*)) or nurse* or physician* or general practition* or doctor* or clinician* or physical therapist* or physiotherapist* or occupational therapist* or dentist* or psychiatrist* or surgeon* or assisti* personnel or care assistant* or (home adj2 aid*) or family practitioner*)).ti.

5. ((part-time or parttime) adj4 (((health* or medical* or nursing or clinical) adj3 (personnel or staff or employ* or care provider* or worker* or assistant* or practitioner*)) or nurse* or physician* or general practition* or doctor* or clinician* or therapist* or physiotherapist* or dentist* or psychiatrist* or surgeon* or assisti* personnel or care assistant* or (home adj2 aid*) or family practitioner*)).tw.

6. 3 or 4 or 5

7. (conference or conference abstract or conference paper or "conference review" or editorial or letter).pt.

8. 6 not 7

9. limit 8 to embase

**PsycINFO (Ovid)**
Date of search: January 17 2019
PsycINFO 1806 to January Week 1 2019
Search hits: 669 (407 after Ovid duplicate removal)

1. exp health personnel/ or (((health* or medical* or nursing or clinical) adj3 (personnel or staff or employ* or care provider* or worker* or assistant* or practitioner*)) or nurse* or physician* or general practition* or doctor* or clinician* or therapist* or physiotherapist* or dentist* or psychiatrist* or surgeon* or assisti* personnel or care assistant* or (home adj2 aid*) or family practitioner*).tw.

2. ((part-time or parttime or half-time or halftime or (reduc* adj3 hour*) or (few* adj2 hours*)) adj10 (job* or work* or staff* or employ* or occupation* or contract* or position* or practice* or shift* or vacanc*)).tw.
3. 1 and 2
4. ((part-time or parttime or half-time or halftime or reduc* hours*) and (((health* or medical* or nursing or clinical) adj3 (personnel or staff or employ* or care provider* or worker* or assistant* or practitioner*)) or nurse* or physician* or general practition* or doctor* or clinician* or therapist* or physiotherapist* or dentist* or psychiatrist* or surgeon* or assisti* personnel or care assistant* or (home adj2 aid*) or family practitioner*)).ti.
5. ((part-time or parttime) adj4 (((health* or medical* or nursing or clinical) adj2 (personnel or staff or employ* or care provider* or worker* or assistant* or practitioner*)) or nurse* or physician* or general practition* or doctor* or clinician* or therapist* or physiotherapist* or dentist* or psychiatrist* or surgeon* or assisti* personnel or care assistant* or (home adj2 aid*) or family practitioner*)).tw.
6. 3 or 4 or 5
7. (editorial or letter or "review book").dt.
8. 6 not 7

**Supplementary federated search in MEDLINE, Embase, PsycINFO (Ovid)**
Date of search: January 18 2019
Additional search hits after duplicate removal against the main search: 21

1. ((pediatrician* or geriatrician* or oncologist* or urologist* or GPs or radiologist* or dental hygienist* or nursing assistant* or nursing aid* or anaesthesiologist* or nursing home staff* or hospital staff* or gynecologist* or ophthalmologist* or obstetrician* or midwi?e*) and ((part-time or parttime or half-time or halftime or (reduc* adj3 hour*) or (few* adj2 hours*)) adj7 (job* or work* or staff* or employ* or occupation* or contract* or position* or practice* or shift* or vacanc*))).tw.
2. ((part-time or parttime) adj4 (pediatrician* or geriatrician* or oncologist* or urologist* or GPs or radiologist* or dental hygienist* or nursing assistant* or nursing aid* or anaesthesiologist* or nursing home staff* or hospital staff* or gynecologist* or ophthalmologist* or obstetrician* or midwi?e*)).tw.
3. 1 or 2
4. remove duplicates from 3
5. limit 4 to yr="2000 -Current"
6. (clinical conference or congress or congresses or editorial or letter).pt.
7. (conference or conference abstract or conference paper or "conference review" or editorial or letter).pt.
8. (editorial or letter or "review book").dt.
9. 6 or 7 or 8
10. 5 not 9

**CINAHL (Ebsco)**
Date of search: January 17 2019
Search hits: 668

S11 S8 OR S9 OR S10 Exclude MEDLINE records

S10 TI ( (“part-time” or parttime) N4 (((health* or medical* or nursing or clinical) N3 (personnel or staff or employ* or “care provider*” or worker* or assistant* or practitioner*)) or nurse* or physician* or “general practition*” or doctor* or clinician* or therapist* or physiotherapist* or dentist* or psychiatrist* or surgeon* or “assisti* personnel” or “care assistant*” or (home N2 aid*) or “family practitioner*”) ) OR AB ( (“part-time” or parttime) N4 (((health* or medical* or nursing or clinical) N3 (personnel or staff or employ* or care provider* or worker* or assistant* or practitioner*)) or nurse* or physician* or “general practiti*” or doctor* or clinician* or therapist* or physiotherapist* or dentist* or psychiatrist* or surgeon* or “assisti* personnel” or “care assistant*” or (home N2 aid*) or “family practitioner*”) )

S9 TI (“part-time” or parttime or “half-time” or halftime or (reduc* N3 hours*)) and (((health* or medical* or nursing or clinical) N3 (personnel or staff or employ* or "care provider*" or worker* or assistant* or practitioner*)) or nurse* or physician* or "general practition*" or doctor* or clinician* or therapist* or physiotherapist* or dentist* or psychiatrist* or surgeon* or "assisti* personnel" or "care assistant*" or (home N2 aid*) or "family practitioner*")

S8 S4 AND S7

S7 S5 OR S6

S6 TI ( “part-time” or parttime or “half-time” or halftime or (reduc* N2 hour*) or (few* N2 hours*)) N10 (job* or work* or staff* or employ* or occupation* or contract* or position* or practice* or shift* or vacanc*) ) OR AB ( “part-time” or parttime or “half-time” or halftime or (reduc* N2 hour*) or (few* N2 hours*)) N10 (job* or work* or staff* or employ* or occupation* or contract* or position* or practice* or shift* or vacanc*) )

S5 (MH "Part Time Employment")

S4 S1 OR S2 OR S3

S3 TI ( nurse* or physician* or "general practition*" or doctor* or clinician* or therapist* or physiotherapist* or dentist* or psychiatrist* or surgeon* or "assisti* personnel" or "care assistant*" or (home N2 aid*) or "family practitioner*" ) OR AB ( nurse* or physician* or "general practition*" or doctor* or clinician* or therapist* or physiotherapist* or dentist* or psychiatrist* or surgeon* or "assisti* personnel" or "care assistant*" or (home N2 aid*) or "family practitioner*" )

S2 TI ( (health* or medical* or nursing or clinical) N3 (personnel or staff or employ* or "care provider*" or worker* or assistant* or practitioner*) ) OR AB ( (health* or medical* or nursing or clinical) N3 (personnel or staff or employ* or "care provider*" or worker* or assistant* or practitioner*) )

S1 (MH "Health Personnel+")

Cinahl supplementary search January 18 2019
Additional search hits after duplicate removal against the main search: 51

TI ( (pediatrician* or geriatrician* or oncologist* or urologist* or GPs or radiologist* or "dental hygienist*" or "nursing assistant*" or "nursing aid*" or anaesthesiologist* or "nursing home staff*" or "hospital staff*" or gynecologist* or ophthalmologist* or obstetrician* or midwi?e*) and ("part-time" or parttime or "half-time" or halftime) ) OR AB ( (pediatrician* or geriatrician* or oncologist* or urologist* or GPs or radiologist* or dental hygienist* or nursing assistant* or nursing aid* or anaesthesiologist* or nursing home staff* or hospital staff* or gynecologist* or ophthalmologist* or obstetrician* or midwi?e*) and (part-

time or parttime or half-time or haltime) ) Exclude MEDLINE records, publication 2000-2019

**ISI Web of Knowledge**
Date of search: January 17 2019
Searh hits: 1117

# 7 #6 OR #5 Indexes=SCI-EXPANDED, SSCI, A&HCI, ESCI Timespan=All years

# 6 TS=(("part-time" or parttime or "half-time" or halftime) near/3 nurse*) or TS=(("part-time" or parttime or "half-time" or halftime) near/3 doctor*) or TS=(("part-time" or parttime or "half-time" or halftime) near/3 physician*) or TS=(("part-time" or parttime or "half-time" or halftime) near/3 clinician*) or TS=(("part-time" or parttime or "half-time" or halftime) near/3 general practition*) or TS=(("part-time" or parttime or "half-time" or halftime) near/3 therapist*) or TS=(("part-time" or parttime or "half-time" or halftime) near/3 physiotherapist*) or TS=(("part-time" or parttime or "half-time" or halftime) near/3 dentist*) or TS=(("part-time" or parttime or "half-time" or halftime) near/3 psychiatrist*) or TS=(("part-time" or parttime or "half-time" or halftime) near/3 surgeon*) or TS=(("part-time" or parttime or "half-time" or halftime) near/3 "assist* personnel") or TS=(("part-time" or parttime or "half-time" or halftime) near/3 "care assistant*") or TS=(("part-time" or parttime or "half-time" or halftime) near/3 "home aid*") or TS=(("part-time" or parttime or "half-time" or halftime) near/3 "home health aid*") or TS=(("part-time" or parttime or "half-time" or halftime) near/3 "family practitioner*")

# 5 #4 AND #3

# 4 TS=(("part-time" or parttime or "half-time" or halftime) NEAR/8 (job* or work* or staff* or employ* or occupation* or contract* or position* or practice* or shift* or vacanc*))

# 3 #2 OR #1

# 2 TS=(nurse* or physician* or "general practition*" or doctor* or clinician* or therapist* or physiotherapist* or dentist* or psychiatrist* or surgeon* or "assisti* personnel" or "care assistant*" or home health aid* or "family practitioner*")

# 1 TS=((health* or medical* or nursing or clinical) NEAR/3 personnel ) or TS=((health* or medical* or nursing or clinical) NEAR/3 staff) or TS=((health* or medical* or nursing or clinical) NEAR/3 employ*) or TS=((health* or medical* or nursing or clinical) NEAR/3 "care provider*") or TS=((health* or medical* or nursing or clinical) NEAR/3 worker*) or TS=((health* or medical* or nursing or clinical) NEAR/3 assistant*) or TS=((health* or medical* or nursing or clinical) NEAR/3 practitioner*)

Supplementary search Web of Science January 21 2019
Additional search hits after duplicate removal against the main search: 51
TOPIC: (( (pediatrician* or geriatrician* or oncologist* or urologist* or GPs or radiologist* or "dental hygienist*" or "nursing assistant*" or "nursing aid*" or anaesthesiologist* or "nursing home staff*" or "hospital staff*" or gynecologist* or ophthalmologist* or obstetrician* or midwi?e*) and ("part-time" or parttime or "half-time" or halftime) ))
Indexes=SCI-EXPANDED, SSCI, A&HCI, ESCI Timespan=2000-2019

**Cochrane Library**
Date of search: January 17 2019
Search hits: CENTRAL 98, Cochrane Reviews 2

#1 MeSH descriptor: [Health Personnel] explode all trees
#2 ((health* or medical* or nursing or clinical) near/3 (personnel or staff or employ* or care provider* or worker* or assistant* or practitioner*)):ti,ab,kw
#3 (nurse* or physician* or general-practition* or doctor* or clinician* or therapist* or physiotherapist* or dentist* or psychiatrist* or surgeon* or (assisti* next personnel) or (care next assistant*) or (family next practitioner*) or (home near/2 aid*)):ti,ab,kw
#4 #1 or #2 or #3
#5 (((part next time) or parttime or (half next time) or halftime or (reduc* near/2 hour*) or (few* near/2 hours*)) near/8 (job* or work* or staff* or employ* or occupation* or contract* or position* or practice* or shift* or vacanc*)):ti,ab,kw
#6 #4 and #5
#7 (((part next time) or parttime or (half next time) or halftime or (reduc* near/2 hour*)) and (((health* or medical* or nursing) near/2 (personnel or staff or employ* or (care next provider*) or worker* or assistant*)) or nurse* or physician* or (general next practi*) or doctor* or clinician* or therapist* or physiotherapist* or dentist* or psychiatrist* or surgeon* or (assisti* next personnel) or (care next assistant*) or (home near/2 aid*) or (family next practitioner*))):ti
#8 ((part next time) or parttime or (half next time) or halftime or (reduc* near/3 hours*)):ti,ab,kw
#9 MeSH descriptor: [Personnel Staffing and Scheduling] explode all trees
#10 MeSH descriptor: [Employment] explode all trees
#11 #9 or #10
#12 #4 and #8 and #11
#13 (((part next time) or parttime or (half next time) or halftime) near/4 (((health* or medical* or nursing or clinical) near/2 (personnel or staff or employ* or (care next provider*) or worker* or assistant*)) or nurse* or physician* or (general next practition*) or doctor* or clinician* or therapist* or physiotherapist* or dentist* or psychiatrist* or surgeon* or (assisting next personnel) or (care assistant*) or (home near/2 aid*) or (family next practitioner*))):ti,ab,kw
#14 #6 or #7 or #12 or #13

Supplementary search Cochrane Library January 21 2019
Additional search hits after duplicate removal against the main search: 0

**SveMed+**
Date of search: January 17 2019
Search hits: 11

Enkel søkning: deltid* OR parttime OR "part-time"

**HTA database (via CRD)**
Date of search: January 17 2019
Search hits: 3

Search 1
Title: parttime or part-time

Search 2
Any field: "part-time" OR parttime, limited to HTA database

**Epistemonikos**
Date of search: January 17 2019
Search hits: 172

Advanced search: Title/abstract: “part-time” or parttime

**Scopus**
Date of search: January 18 2019
Search hits: 917

( ( TITLE-ABS-KEY ( "part-time" OR parttime ) W/3 TITLE-ABS-KEY ( work* OR job* OR employment ) ) AND TITLE-ABS-KEY ( nurse* OR physician* OR "general practition" * OR doctor* OR clinician* OR therapist* OR physiotherapist* OR dentist* OR psychiatrist* OR surgeon* OR "assisti* personnel" OR "care assistant*" OR ( home W/2 aid* ) OR "family practitioner*" ) ) OR ( ( TITLE-ABS-KEY ( "part-time" OR parttime ) W/3 TITLE-ABS-KEY ( work* OR job* OR employment ) ) AND TITLE-ABS-KEY ( ( health* OR medical* OR nursing OR clinical ) W/3 ( personnel OR staff OR employ* OR "care provider*" OR worker* OR assistant* OR practitioner* ) ) ) AND ( LIMIT-TO ( DOCTYPE , "ar" ) OR LIMIT-TO ( DOCTYPE , "re" ) OR LIMIT-TO ( DOCTYPE , "ch" ) OR LIMIT-TO ( DOCTYPE , "no" ) OR LIMIT-TO ( DOCTYPE , "ip" ) OR LIMIT-TO ( DOCTYPE , "bk" ) ) AND ( LIMIT-TO ( PUBYEAR , 2019 ) OR LIMIT-TO ( PUBYEAR , 2018 ) OR LIMIT-TO ( PUBYEAR , 2017 ) OR LIMIT-TO ( PUBYEAR , 2016 ) OR LIMIT-TO ( PUBYEAR , 2015 ) OR LIMIT-TO ( PUBYEAR , 2014 ) OR LIMIT-TO ( PUBYEAR , 2013 ) OR LIMIT-TO ( PUBYEAR , 2012 ) OR LIMIT-TO ( PUBYEAR , 2011 ) OR LIMIT-TO ( PUBYEAR , 2010 ) OR LIMIT-TO ( PUBYEAR , 2009 ) OR LIMIT-TO ( PUBYEAR , 2008 ) OR LIMIT-TO ( PUBYEAR , 2007 ) OR LIMIT-TO ( PUBYEAR , 2006 ) OR LIMIT-TO ( PUBYEAR , 2005 ) OR LIMIT-TO ( PUBYEAR , 2004 ) OR LIMIT-TO ( PUBYEAR , 2003 ) OR LIMIT-TO ( PUBYEAR , 2002 ) OR LIMIT-TO ( PUBYEAR , 2001 ) OR LIMIT-TO ( PUBYEAR , 2000 ) )

**Sociological Abstracts (ProQuest)**
Date of search: January 17 2019
Search hits: 508
(MAINSUBJECT.EXACT("Health Professions") OR noft((health* OR medical* OR nursing OR clinical) AND (personnel OR staff OR employ* OR care provider* OR worker* OR assistant* OR practitioner*)) OR noft(nurse* OR physician* OR general practition* OR doctor* OR clinician* OR therapist* OR physiotherapist* OR dentist* OR psychiatrist* OR surgeon* OR assisti* personnel OR care assistant* OR (home AND aid*) OR family practitioner*)) AND (MAINSUBJECT.EXACT.EXPLODE("Part Time Employment") OR noft(part-time OR parttime OR half-time OR halftime))

**Social Services Abstracts (ProQuest)**
Date of search: January 17 2019
Search hits: 213

S3 1 and 2
S2 MAINSUBJECT.EXACT.EXPLODE("Part Time Employment") OR noft(part-time or parttime or half-time or halftime)
S1 MAINSUBJECT.EXACT("Health Professions") OR noft((health* or medical* or nursing or clinical) and (personnel or staff or employ* or care provider* or worker* or assistant* or practitioner*) ) OR noft(nurse* or physician* or general practition* or doctor* or clinician* or therapist* or physiotherapist* or dentist* or psychiatrist* or surgeon* or assisti* personnel or care assistant* or (home and aid*) or family practitioner*)

**International Clinical Trials Regitries Platform (ICTRP)**
Date of search: January 17 2019
Search hits: 26

Simple search: part-time or parttime

**Norwegian Institute of Public Health**
Date of search: January 18 2019
https://www.fhi.no/oversikter/alle/
Separate searches in the publication list: deltid, deltids, deltidsarbeid, “part-time”, parttime
Search hits: 0 relevant

**Swedish Agency for Health Technology Assessment and Assessment of Social Services**
Date of search: January 18 2019
https://www.sbu.se/sv/publikationer/
Separate searches in the publication list: deltid, deltids, deltidsanställd, deltidsanställda, deltidsanställning, “part-time”, parttime
Search hits: 0 relevant

**SFI - The Danish National Centre for Social Research**
Date of search: January 18 2019
https://www.vive.dk/da/udgivelser/
Separate searches in the publication list: deltid, deltids, part-time, part time, deltidsansættelser, deltidsansættelse
Search hits: 1 possible relevant

## Appendix 2. Excluded studies (N=29)

| Study<br>First author<br>(reference no.) | Reason for exclusion |
|---|---|
| Bodenheimer 2008 (42) | Not about PT work, but about the coordination of care. |
| Bodenheimer 2018 (7) | Essay only. |
| Burke 2004 (43) | Do not compare PA and FT. |
| Burke 2004 (43) | Do not compare PA and FT. |
| Engquist 2000 (44) | Not about effects or experiences of PT work, but about injuries among nursing personnel. |
| Enos 2015 (45) | Brief commentary. |
| Ersek 2014 (46) | Not about effects of PT work, but effects of a decision aid. |
| Glauser 2018 (47) | News piece only. |
| Grossman 2018 (48) | Irrelevant outcomes only (productivity). |
| Haggarty 2008 (49) | PT work is not the main focus, but continuity of care if 50% at the clinic and 50% at the hospital. |
| Hamadi 2014 (50) | Thesis. About injury reporting in PT personnel. |
| Havlovic 2002 (51) | About scheduling, and satisfaction with the work-schedule/turnus/shift, not specifically about PT work. |
| Huang 2016 (52) | Paediatric department performance, not physician performance. Unclear if the comparison group are 'real' paediatric physicians. |
| Ingstad 2017 (53) | Not about the effects or experiences of PT work (irrelevant outcomes). |
| Ingstad 2011 (54) | Editorial/opinion piece. |
| Jamieson 2007 (55) | Not about effects or experiences of PT work, but about nurses' motivators for working PT. |
| Knopf 2015 (45) | Brief commentary. |
| Lachish 2016 (56) | Not about effects and experiences of PT work. |
| Levine 2008 (57) | Only PT academic physicians. |
| Lugtenberg 2006 (58) | Not about the effects and experiences of people actually working PT |
| Malette 2011(59) | Focus not on PT work. |
| Menashe 2018 (60) | About PT work in the academia (not clinical work with patients). |
| McGillis 2011 (61) | Editorial only |
| Milanese 2013 (62) | Book |

| | |
|---|---|
| Nagneh 2017 (63) | Not about PT work, but about organisational behaviour and commitment. |
| Nygaard 2011 (64) | Brief commentary. |
| Schmit-Jongbloed 2017 (65) | Work congruence PT was less than 1 FTE. Academic PT only. |
| Schott 2017 (66) | Only about scheduling and structures of PT work. |
| Swami 2017 (67) | Not about the effect and experiences of PT work. |
| Thomas 2006 (68) | Ineligible participants, as not all were involved in direct patient care (and not all were healthcare personnel). |
| Vinod 2002 (69) | Not the effect on or experiences of consultants working PT. |

FT: full-time; PT: part-time;

## Appendix 3. Summaries of included qualitative studies (N=2)

Results Summary **Jamieson 2008 (23) – The realities of PT nursing**

Nursing shortages (both current and projected) and expectations of effective workforce planning and management have encouraged the development of knowledge in the area.

Study participants perceived that irrespective of the many positive experiences gained through PT nursing, there were associated difficulties or costs.

The professional interaction and development difficulties experienced contributed to PT nurses inability to achieve their optimal potential. PT nurses responded by making adjustments to the conditions that had a causal influence on their difficulties. However, PT nurses were disempowered to change organizational practices that limited their ability to access information, contribute to decision making, and to access structured learning and horizontal and vertical advancement opportunities.

PT nurses were surrounded by a glass ceiling and walls. Their constructs of professional identity established that they needed to reach beyond their confines to be effective professional nurses but barriers remained firmly in place while they continued to work PT. Organizational factors prevented the utilization of PT nurses full productive potential; that contributed to the marginalization and ghettoizing of these nurses.

In the current study, PT nurses felt accepted. Nonetheless, there were strong demands for PT nurses to conform to traditional organizational practices. Examples of these conformity pressures were rigid work schedules, resistance to promotion of PT nurses and inflexible scheduling of meetings and education sessions. The study reported that differences in organizational responses to PT employment could be represented by the terms “accommodation”, “elaboration” and “transformation”. In the study, it is suggested that accommodation may be a more accurate term than acceptance to describe current healthcare organizational responses to PT nurses. In this study, there was evidence of innovative strategies used by nurse managers and nurse educators that responded to PT nurses needs without changing other work rituals. There was no evidence of a transformation response by healthcare organizations. Transformation responses as described in the study, has a greater willingness to accept non-routine behaviour, movement away from the status quo by providing a highly supportive continuous reorganization of work and career paths to adapt to changing workforce issues such as PT working.

In this study PT nurses were not willing to passively accept the difficulties that they experienced. In an era of current and projected nursing shortages, accommodating PT nurses and expectations of conformity are no longer adequate managerial strategies. In a healthcare environment of diminishing resources, PT nurses require support to limit the difficulties that they encounter to permit more successful achievement of each individuals professional potential. Harnessing the full productive potential of PT nurses will in turn enable healthcare organizations to more effectively optimize services. It is clear from these findings that nurse managers need to move from their current accommodation responses to PT nurses to provision of more successful support through elaboration and transformation responses. It is recommended that nurse managers consider how work and career paths can be reorganized to adapt to PT nursing to optimize these nurses ability to achieve their full productive potential.

Results Summary **Dwan 2014 (20) – Are PT general practitioners workforce idlers of committed professionals**

The traditional view of general practice holds that only general practitioners (GPs) in full-time clinical practice can provide quality patient care. Nevertheless, increasing numbers of GPs, in particular female and younger, are choosing to work "PT." This brings concerns about the health workforce's ability to meet demand of the aging population, and that patient care may be compromised. Workforce planning requires an understanding of all aspects of the workforce's behaviour and preferences. Authors investigated 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 patients and the profession.

In this study, the majority of participants were in full-time paid employment (at least 40hrs/wk), while PT in clinical general practice. All the GPs in paid employment other than general practice were working in health-related areas, including education and training, policy, research and academia, and medical subspecialties. Gender and the pressures of general practice  as a desire for variety in their working life were mentioned by the study participants. Several women stated that the capacity to both train and work less than full-time drew them towards general practice. Participants mentioned the emotional and physical consequences of general practice and reported that consultations increasingly required the management of patients with complex, chronic conditions who also required psychological management. They mentioned how tiring and demanding their job has become. Coupled with unrealistic patient expectations, these factors led GPs to be concerned about maintaining the quality patient care they considered professionally desirable. Many diversified their work activities to ensure that they retained their professional standards. Many participants felt that full-time general practice did not allow them to be the best GP they could be. Participants recognized that "inner resources" were central to providing good quality care. Also, the remuneration for sessional clinical work was seen as modest, particularly due to the number of patients GPs saw with chronic and complex diseases and the associated unpaid paperwork. Continuing medical education was seen as important but several GPs found it slightly difficult to keep up to date clinically.

Current reports on the trend towards PT general practice may be misleading. Many GPs who carry less than a full-time clinical load could be in FT paid employment. This finding challenges the perception – sometimes seen in the press – that sessional clinical practice is a personal indulgence that disregards the needs of the community. GPs choice of sessional work is a professional response to the increasing demands within the consultation. It enables GPs to maintain their commitment to quality patient care and their profession, while attenuating the challenges of demanding consultations. Sessional general practitioners demonstrate strong commitment to their patients and the profession. Policy should reframe sessional general practice as an opportunity, rather than a loss. Supporting GPs to develop portfolio careers, which are sustainable, deliver high quality patient care, and contribute in clinical and non-clinical areas, will be more fruitful than wishing for a return to long clinical hours.

# Appendix 4. Characteristics of included studies (N=23)

| Study First author (reference no.) | Country | Study design | Context/ Setting | Type end number of healthcare personnel |
|---|---|---|---|---|
| Batch 2009 (19) | Australia | Literature review | Undefined | Nurses; unclear no |
| Burke 2000 (30) | Canada | Cross-sectional | 1,668 nursing units (unclear no of hospitals; Two thirds in medical/surgical, intensive care/coronary, emergency and obstetrics. | Nurses; N=1,345 (all members of a nursing union) |
| Burke 2013 (2) | Spain | Cross-sectional | Undefined | Nurses; N=2,087 mainly from two areas in Spain |
| Dwan 2014 (20) | Australia | Qualitative | General practice | Physicians; N=26 |
| Fairchild 2001 (21) | USA | Retrospective cohort study | 2 academic outpatient primary care networks | Primary care physicians; N=142 |
| Helligers 2008 (22) | The Netherlands | Qualitative/mixed | Self-employed medical specialists hospital teams (N=28) | MDs, Internists, surgeons, radiologists; N=226 |
| Jamiesson 2008 (23) | Australia | Qualitative | Undefined | Nurses; N=86 |
| Kapborg 2000 (32) | Sweden | Cross-sectional | Undefined | Nurses receiving un-employment benefits; N=178 (some may have been biomedical staff) |
| Keil 2000 (34) | Canada, south-western Ontario | Cross-sectional | 4 hospitals | Nurses; Study1: N=205; Study 2: N=251 |
| Kogan 2018 (41) | Israel | Register study | 2 general surgery departments | Senior physicians N= 18; Nurses N=39 |
| Lane 2004 (35) | UK | Cross-sectional | 3 NHS Wales hospital units | Nurses, N=1,270 |
| McAiney 2017 (33) | Canada | Cross-sectional | Long term care homes (unclear no) | Nurse practitioners, N=45 |
| McIntosh 2008 (24) | USA | Literature review | Acute care/anasthesiology practice | Anesthesiologists, N=unclear |
| Mechaber 2008 (37) | USA | Cross-sectional | Primary care /Family physician clinics (unclear no) | Primary care physicians, N=420 |
| Murray 2000 (38) | USA, Massachusetts | Cross-sectional | Primary care practices (unclear no) | Primary care physicians, N=727 |
| Oppel 2018 (36) | USA | Cross-sectional | 3,026 general hospitals | Nurses (unknown number) |
| Panattoni 2014 (39) | USA, Northern California | Cross-sectional | 1 large multi-speciality ambulatory care practice | Primary care physicians, N=205 |
| Parkerton 2003 (40) | USA, Western Washington | Croos-sectional | 25 out-patient clinics of a single medical group (primary care) | Primary care physicians, N=194 |
| Rosland 2015 (25) | USA | Retrospective observational | 2 sites within one VA healthcare system | Physicians (unclear number) |
| Street 2011 (26) | Australia | Cross-sectional | 18 wards in a large public hospital | Nurses (N=259) |
| Telljohann 2004 (27) | USA | Cross-sectional | 16 elementary schools | School-nurses, N=16 |
| Telljohann 2004 b (28) | USA | Cross-sectional | 14 elementary schools | School-nurses, N=14 |
| Zeytinoglu 2015 (29) | Canada | Cross-sectional | Homes of residents (unclear number) receiving care from 11 HHC organisations | Home care workers (nurses, therapists, and personal support workers, PSW*); unclear number |

* PSWs are unregulated, but certified through an education programme; HHC: home health care; MD: medical doctor; NHS: National Health System; PSW: personal support worker; UK: United Kingdom; USA: United States of America

# Appendix 5. Personal characteristics of healthcare personnel in the included studies

Personal characteristics of nurses in included studies (N=11)

| Study First author (reference no.) | Age (mean; SD or range) | Gender Number (%) female | Marital status/ Partner | Children (one or more) | Number (%) employed PT and FT* |
|---|---|---|---|---|---|
| Burke 2000 (30) | 42 yrs (all) | 97% (all) | 80% | 77.8% | PT: 700 (52%):<br>FT: 645 (48%) |
| Burke 2013 (2) | PT:35.8 (9.38)<br>FT:39.8 (10.89),<br>P<0.001 | PT: 97%<br>FT: 100% | Similar in both groups. | - | PT: 290 (14%)<br>FT: 1,797 (86%) |
| Jamieson 2008 (23) | 25<30: 3 (3.5%);<br>30<40: 30 (35%);<br>40<50: 40 (46.5%);>50:13 (15%) | 80 (93%) | - | 71 (82.5%) | PT: 86 (100%) |
| Kapborg 2000 (32) | M: 37 (24 to 60) yrs | 88 (91.7% ) | 83.3%, | 59 (61.5 %) | PT: 96 (100%) |
| Keil 2000 (34) | PT:38.3 (8.03)<br>FT:38.5 (8.4) | | | - | |
| Lane 2004 (35) | PT:36.4<br>FT:31.1 (p<0.0001) | 100% | - | - | Total N:643 |
| McAiney 2017 (33) | PT. 25-54 y: N=12 ; 55-70 y: N=2<br>FT: 25-54 y: N=17; 55-70 y:N= 6 | PT:85.7%<br>FT:100% | - | - | PT: 14 (38%)<br>FT: 23 (62%) |
| Oppel 2018 (36) | - | - | - | - | - |
| Street 2011 (26) | - | PT: 125 (97%);<br>FT: 89 (85%) | - | - | PT: 133 (57.3%)<br>FT: 99 (42.7%) |
| Telljohann 2004 (27) | - | - | - | - | PT: 8; FT_8 |
| Telljohann 2004b(28) | - | - | - | - | PT:7: FT:7 |

FT= full time; PT= part time; NA= not applicable, as only part-time nurses included: * Only those who responded to the surveys.

Personal characteristics of physicians in included studies (N=9)

| Study First author (reference no.) | Age (mean; SD or range) | Gender Number (%) female | Marital status/ Partner | Children (one or more) | Number (%) employed PT and FT* |
|---|---|---|---|---|---|
| Dwan 2014 (20) | Females:47 yrs<br>Males: 58 yrs | 17 (66%) | - | - | Total N=26<br>PT: 17 (65.4%)<br>FT: 9 (34.6%) |
| Fairchild 2001 (21) | - | PT: 42 (61%)<br>FT: 19 (30%) | - | - | Total N= 132<br>PT: 69 (51 %)<br>FT: 63 (49 %) |
| Helligers 2008 (22) | PT:48.1 (7.9) yrs<br>FT:49.1 (7.5) yrs | PT: 38 (20.8%)<br>FT: 1 (0.2%) | - | - | Total N= 226<br>Teams with PT: PT: 77 (42.3%); FT:105 (57.7%)<br>Teams without PT: FT:44 |
| McIntosh 2008 (24) | - | - | - | - | - |
| Mechaber 2008 (37) | PT: 43 yrs<br>FT: 44 yrs | PT: 77%<br>FT: 37% | PT: 86%<br>FT: 83% | - | Total N=420<br>PT: 77 (18.3%)<br>FT: 343 (81.7%) |

| | | | | | |
|---|---|---|---|---|---|
| Murray 2000 (38) | PT: 47 yrs<br>FT: 48 yrs | PT: 40 (49)<br>FT: 71 (42) *percentages refer to male nurses | - | - | Total N=821<br>PT: 78 (8.5%)<br>FT: 644 (69.9%)<br>(Overtime:199 or 21.6%) |
| Panattoni 2014 (39) | - | 134 (65.4%) | - | - | Total N=205<br>50-60%: 33; 61-70%:22; 71-80%: 51 ; 81-90%; 28; 91-103%: 71 |
| Parkerton 2003 (40) | | PT:42%<br>FT:13% | - | - | Total N=194<br>PT: 156 (80.4%)<br>FT: 38 (19.6%) |
| Rosland 2015 (25) | - | - | - | - | - |

FT: full-time; PT: part-time

Personal characteristics of mixed occupations in included studies (N=2)

| Study First author (reference no.) | Age (mean; SD or range) | Gender Number (%) female | Marital status/ Partner | Children (one or more) | Number (%) employed PT and FT* |
|---|---|---|---|---|---|
| Kogan 2018 (41) | - | - | - | - | A: 2 of 8 (25%) senior physicians worked PT; 16 of 19 nurses worked PT (Total N=27)<br>B: 5 of 10 (50%) of senior physicians worked PT (25% more PT physicians); 17 of 20 nurses worked PT (Total N=30) |
| Zeytinoglu 2015 (29) | 44.9 y | 92% | - | - | Total N= 441<br>PT: 186 (35%)<br>FT: 255 (48%) |

FT: full-time; PT: part-time; SD: standard deviation

# Appendix 6. Education and occupational characteristics of healthcare personnel in the included studies

Education and occupational characteristics of included nurses (N=11)

| Study First author (reference no.) | Level of education/ grade | Licence /Certification | Years in practice | Years with tenure | Hours of clinical work/week |
|---|---|---|---|---|---|
| **Author Year** | **Level of education/grade** | **Licence/ Certification** | **Years in practice** | **Years with tenure** | **Hours of clinical work/week** |
| Burke 2000 (30) | RNA diploma:1%; RN-College:50.2%; RN-Hospital:32.6%; BA:13.5%; MA:0.7% | - | - | Mean no of years in current unit: 9 yrs<br>Mean years in current hospital: 11 yrs | - |
| Burke 2013 (2) | Speciality: 33%; No speciality:67% | - | | At least 10 years (41%)<br>2 y or less: 35%; 3-5 y: 23%; 6-10 y:18.5%; 11-20 y:17%; 21 y or more, 7% | - |
| Jamieson 2008 (23) | Nurse education | Nil: 25 (29%); Other: 8 (9%); Hospital based certificate: 14 (17%); Bachelor: 13 (15%); Graduate certificate:2 (14%); Graduate diploma:8 (9%); Master: 5 (6%); PhD: 1 (1%) | <2 y: 1 (1%); 2-5 y: 5 (6%); 5 to<10: 8 (9%); 10 to<15: 12 (14%); >15 y::60 (70%) | - | Hours per week: 28-32 h: 38 (44%); 20-24: 23 (27%); 12-16: 20 (23%); 4-8 :5 (6%) |
| Kapborg 2000 (32) | - | - | - | | PT: 66% worked 60-80%; 4 worked < 50 %, 7 worked between 80 and 90 %. Sixteen nurses worked on an hourly basis only. |
| Keil 2000 (34) | 148 RNs; 56 RPNs (all) | | Hospital experience (all): 10.92 y (7.98)yrs<br>Unit experience:6.12 (6.24) yrs | | - |
| Lane 2004 (35) | FT nurses dominated higher grades (only 7% were PT nurses)<br>HED qualifications: PT:36; FT:24, NS | - | Years of experience:<br>PT: 14.8 y; FT:11.5 y, p<0.001 | | - |
| McAiney 2017 (33) | Nursing diploma: PT: 14.3% (2); FT: 8.7% (2)<br>Baccalaureate: PT: 42.9% (6); FT: 52.2% (12)<br>Master's: PT:42.9% (6);FT: 39.1% (9) | *Licenced NP designation*<br>Family/primary healthcare/all ages:PT:100% (14); FT: 95.7% (22)<br>Speciality/acute care: PT: 0; FT: 4.3% (1)<br>*Geriatrics education and certification*:<br>Courses with geriatric theory: PT: 50.0% (7); FT: 56.5% (13)<br>Clinical NP experience with geriatric population: PT: 71.4% (10); FT: 56.5% (13) | Years of experience as an RN in LTC prior to NP practice:<br>0 y: PT: 64.3 %(9); FT: 60.9% (14)<br>1-4 yrs: PT:21.4% (3); FT: 8.7% (2)<br>5-9 yrs:PT: 0; FT: 13.0% (3)<br>10 yrs or more: PT:14.3 % (2); FT: 17.4%(4) | | - |

| | | | | | |
|---|---|---|---|---|---|
| | | CAN certification: PT: 0; Other:0; None: 0; FT: 39.1% (9); Other:21.7%(5); None: 8.7% (2) | | | |
| Telljohann 2004 (27) | School-nurses | | | | |
| Telljohann 2004b (28) | School-nurses | | | | |

BA: bachelor degree; FT: full-time; HED: higher education qualifications; MA: master's degree; NP: nurse practitioner; PT: part-time; RN: registered nurse; RPN: registered practice nurse

Education and occupational characteristics of physicians in included studies (N=9)

| Study First author (reference no.) | Level of education/ grade | Licence /Certification | Years in practice | Years with tenure | Hours of clinical work/week |
|---|---|---|---|---|---|
| Dwan 2014 (20) | General practitioners | Registration (%): Vocationally registered: 82; RACGP register:4; Other: 14 | - | - | |
| Fairchild 2001 (21) | Primary care physicians | Board certified, no (%): PT: 65 (94) FT: 63 (100), p=0.05 | PT: 11.9 (9.2 to 14.6)yrs FT: 13.9 (11.1 to 16.4) yrs, p=0.25 | - | PT: 11.2 (9.9 to 12.6) yrs FT: 27.6 (21.6 to 28.9) yrs, p<0.01 |
| Helligers 2008 (22) | Three specialities: internal medicine, surgery and radiology | - | - | PT:9.4 yrs (8.4); FT: 9.3 yrs (7.0) | - |
| McIntosh 2008 (24) | Anaesthesiologists | - | - | - | - |
| Mechaber 2008 (37) | 53% internal medicine: 47 family medicine | - | - | - | - |
| Murray 2000 (38) | Generalist physicians (family practitioners, general internists, or general practitioners): PT: 79(41); FT:82 (38) | - | - | - | - |
| Panattoni 2014 (39) | Speciality: Family medicine: 104 (50.7%); Internal medicine: 101 (49.3%) | - | Years since medical school: 16.2 (8.4)yrs | - | - |
| Parkerton 2003 (40) | Primary care physicians | - | - | - | - |
| Rosland 2015 (25) | Primary care physcians | - | - | - | - |

FT: full-time; PT: part-time; RACGP:

Education and occupational characteristics –studies including mixed occupations (N=2)

| Study First author (reference no.) | Level of education/ grade | Licence /Certification | Years in practice | Years with tenure | Hours of clinical work/week |
|---|---|---|---|---|---|
| Kogan 2018 (41) | Senior physicians, nurses | All regulated | - | - | - |
| Zeytinoglu 2015 (29) | All visiting, and office-based FT, PT and casual home care workers: Nurses, therapists, and personal support workers | - | - | - | - |

FT: full-time; PT: part-time

# Appendix 7. Outcomes reported in the included studies

| Studies of nurses | Outcomes | No of studies |
|---|---|---|
| **Nurse level outcomes** | Psychological well-being (e.g. psychosomatic symptoms, physical health, medication use, lifestyle habits, emotional exhaustion, cynicism , professional efficacy, and burnout) | 3 studies (2, 30, 32) |
| | Work outcomes (e.g. work status congruence, perceived support, intention to quit, absenteeism, feelings of insecurity, workload, emotional demands, work-home interference) | 3 studies (2, 30, 34) |
| | Job involvement, affective commitment, work engagement | 1 study (2) |
| | Perceived professional competence | 1 study (32) |
| | Achievement/investment in profession (e.g. career development, training, promotion, equal opportunities) | 1 study (35) |
| | Achieving their personal optimal nursing potential | 1 study (23) |
| | Communication practices | 1 study (19) |
| | Satisfaction with collaboration | 1 study (33) |
| | Experiences of handover | 1 study (26) |
| | Satisfaction (overall and/or job satisfaction ) | 3 studies (30, 34, 35) |
| **Patient level outcomes** | Experiences of care | 1 study (36) |
| | Access to and availability of school nurse | 1 study (28) |
| | Missed school days (due to poor access) | 1 study (27) |

NP: nurse practitioner; MD: medical doctor

| Studies of physicians | Outcomes | No of studies |
|---|---|---|
| **Physician level outcomes** | Access and continuity of care (e.g. timely routine care appointments, timely urgent appointments, waiting time, physician knowledge of medical conditions, rate of specialist care). | 2 studies (25, 39) |
| | Access, continuity of care, comprehensiveness, integration, clinical interaction, interpersonal treatment, and trust (a patient –based assessment) | 1study (36) |
| | Quality of care (and efficiency) e.g. compliance with guidelines | 2 studies (21, 40) |
| | Commitment to patients and profession | 1 study (20) |
| | Clinical competence | 1 study (24) |
| | Size of informal work networks, frequency of communication, efficient reachability, and intended trust relationships (communication within the teams of medical specialists) | 1 study (21) |
| | Physician outcomes (job stress, job control and burnout) | 1 study (37, 38) |
| | Satisfaction | 2 studies (37, 38) |
| **Patient level outcomes** | Patient satisfaction | 4 studies (25, 38-40) |
| | Patione outcomes (anaesthesia) | 1 study (24) |

| Studies of mixed occupations | Outcomes | No of studies |
|---|---|---|
| Medical staff | Length of stay, mortality rate, urgent repeated hospitalisations, | 1 study (41) |
| | Physician availability, speed of response of nurses to patients' nightly calls, frequency of clothing and bedding replacement, reception and release processes. | 1 study (41) |
| Home care staff | Stress symptoms (and job insecurity) | 1 study (29) |

## Appendix 8. Data collection, response rate, outcomes, main (narrative) results, and study limitations

Studies of nurses (N=11)

| Study First author (reference no.) | Data collection | Response rate (%) | Outcomes | Main (narrative) results | Limitations |
|---|---|---|---|---|---|
| Burke 2000 (30) | No info | 1,362 of 3,900 (35% ) responded | Job satisfaction, work status congruence, work outcomes, and psychological well-being | PT staff with congruent work status tended to report the highest levels of psychological wellbeing, (insignificant finding) | -The study was conducted during a period of turbulence in the health care system as hospitals restructured, merged, downsized or closed<br>- Cross-sectional study why causality cannot be inferred |
| Burke 2013 (2) | 2010 | Unclear | Job Demands (emotional demands, workload, work-home interference, burnout) social support) Psychological wellbeing (support, psychosomatic symptoms, self-reported health, medication use), and reasons for working PT. Professional development (autonomy, development)and job involvement (affective commitment, work engagement) | PT nursing staff indicated generally lower levels of commitment involvement and engagement compared to their full-time colleagues, and reported lower levels of job resources such as autonomy and self-development opportunities | -Self report questionnaires may bias answers<br>- Cross sectional why causality cannot be inferred<br>- Sample was large but unclear if representative<br>- Nurse and work/organisational outcomes were correlated, inflating the relationship reported. |
| Jamiesson 2008 (23) | unclear | N/A (interview) | Realities of part-time work | Inability to achieve personal optimal nursing potential; PT linked to a disconnection within the workplace and challenges in the provision of client care | -None mentioned |
| Kapborg 2000 (32) | unclear<br><br>Questionnaire not further described. | 98 of 178 responded<br><br>Note: some questionnaires had been sent to people who were not nurses, why response rate could not be calculated | Perceived self-confidence, and professional competence,<br>Feelings of uncertainty about the future,<br>Difficulties in planning their time.<br>Wellbeing, and other outcomes. | Nurses who had been forced into PT employment reported feeling less self-confident, they also experienced a worsening financial situation. Most nurses did not feel anxious about working within their area of competence, but some nurses expressed lack of professional experience. Nurses typically felt uncertain about their future, and found it difficult to plan their time. | -Nurses may have been missed<br>-One single county<br>-Small sample size<br>-Poor description of included nurses<br>-Unclear when data was collected<br>-Unclear what questionnaire was used |
| Keil 2000 (34) | 1992 (6 months after re-structuring) | 37% response rate (unclear | Nurse overall satisfaction | There were no differences in overall job satisfaction or in satisfaction | -Cross-sectional why cause and effect cannot be inferred |

| | | | | | |
|---|---|---|---|---|---|
| | | how many were employed PT) | | between PT and FT nurses, | -They do not appear to know the response rate for nurses who work PT<br>-The authors say they will look at nurses attitudes to work (comparing congruent work status and non-congruent work status), but they don't seem to do it. |
| Lane 2004 (35) | 1997 | 643 of 1,270 (51%) responded | Achievement in nursing profession | PT female nurses do not 'invest less' in their careers that FT nurses, in terms of qualifications and experience. The organisational context affects how opportunities are structured for PT nurses. | -Cross-sectional why cause and effect cannot be inferred<br>-A further limitation of the study concerns the definition of a nursing career. The researchers defined nursing careers in terms of progression through the clinical grading structure.<br>-At the time writing, as a result of chronic staff shortages impacting on levels of patient care, the NHS faces stringent targets for increasing the number of nurses employed, |
| McAiney 2017 (33) | July 2009 – Sept 2010<br>Questionnaire developed by the investigators, and unclear if validated. | 37 of 45 NPs (82%) responded | Nurse satisfaction | Nurse practitioner satisfaction with collaboration with MD was high and did not differ between NPs, employed PT and FT | -Some NPs may have been missed, as no existing register of NPs.<br>-Small sample size<br>-Did not explore all aspects of collaboration<br>-Did not give the MD perspective<br>-Data collected before 2011 when NP practice got more restricted |
| Oppel 2018 (36) | 2010-2012 | NA (secondary data from 2 sources) | Patient experiences of care | A higher proportion of PT nurses was positively associated with patients' experiences. | -Measurement of nurse staffing patterns using aggregated hospital data, which cannot fully account for differences in workload and inpatient activity across nursing units.<br>-The measure of staffing level used, that count a nurse as 0.5 FTE independently of number of hours worked.<br>-No measure of skill mix available (and therefore no information on the care |

| | | | | | |
|---|---|---|---|---|---|
| | | | | | provided by nursing assistants) |
| Street 2011 (26) | At change of three shifts on one day. | - | Nurses experience of handover | Significant differences in the experiences of handover (duration, location, method) between PT and FT nurses. | -Data collected during a single day only.<br>-Result data from nurse receiving handover, but not from the other end.<br>-No data were collected on factors that may affect handover.<br>-No data collected on the sole, first or second handovers relative to the commencement of the shift. |
| Telljohann 2004 (27) | 2002-2003 academic school year. | Aggregated school data (from forms filled in by nurses) | Missed days of school | Students with asthma who were poor or who were African-American and in schools with FT nurses missed significantly fewer days (3 days, or 23% fewer missed days) than did their counterparts with asthma in school with PT nurses. | -Some students may not have been diagnosed with asthma, which may threaten the internal validity.<br>-Some students may have been missed if their parents did not fill in the forms correctly and in time.<br>-Some of the school absences may not have been related to asthma. |
| Telljohann 2004 b (28) | 2001-2002 academic school year | Data were routinely collected by all school nurses as part of their standard protocol. | Access to care | Of the 30 conditions or activities, 28 were significantly higher with FT nurses as compared to PT school nurses. Only major/terminal illness and sickle cell visits were higher for the 2 day a week school nurse group | -Some nurses found the completion of the form burdensome, which may have decreased the internal validity.<br>-The form did not allow the nurses to specify the time spent with students or the extent of their health problems.<br>-No encounter form like those that are used in epidemiological studies was used (which may have been beneficial)<br>-Results may not be generalisable to other countries, or states, or to rural areas.<br>-To use mean/monthly visits per health condition to calculate the missing data may not have been an accurate representation of the data.<br>-No interrater reliability was established |

* After excluding those that could not be contacted. Abbreviations: FT: full-time; MD: medical doctor; NP: nurse practitioner; NA: not applicable; PT: part-time

Studies of physicians (N=9):

| Study First author (reference no.) | Data collection | Response rate (%) | Outcomes | Main (narrative) results | Limitations |
|---|---|---|---|---|---|
| Dwan 2014 (20) | Interviews, unclear time-point for data-collection | NA | Reasons for working PT, commitment to work and patients. | Results suggest that PT GPs diversify to be a better professional; some of the reasons to work PT are to be a better professional | None mentioned. |
| Fairchild 2001 (21) | Data from administrative data –bases from 1998 | NA | Patient satisfaction<br><br>Physician productivity, resource utilisation, and compliance with screening guidelines | Results suggest that academic PT PCPs are at least as efficient as full-time PCPs, and that the quality of their work is similar. Patient satisfaction was also similar across groups. | -Retrospective study, using administrative data.<br><br>-Conducted only at two institutions within one integrated delivery system, and may not be generalizable to other settings.<br><br>-Non-academic PT PCPs may differ from those included in the study.<br><br>-The systematically collected quality measures (compliance with guidelines for disease prevention) are coarse and do not fully capture quality). |
| Helligers 2008 (22) | Interview and questionnaire -2005 | No info | Patient satisfaction<br><br>Physician consulting, communication and trust. | PT working does not have a great effect on informal work-related networks of doctors, the frequency of communication contacts is lower in mixed teams, but the strength of intended trust relationships is equally high for PT and FT doctors. | -Data from a small number of available medical specialist teams , why genraiisability may be a problem.<br><br>-Little information on the quality of relationships in networks.<br><br>-Referencs madee to other studies of networks are only partly comparable as many of these focus on families and neighbourhoods, which differ from the work context. |
| McIntosh 2008 (24) | Review of the literature | NA | Pros and cons for PT work. | Recruiting and retaining the best and brightest graduates, as well as the older workers who wish to reduce | -None mentioned |

| | | | | | |
|---|---|---|---|---|---|
| | | | | their working time as they approach retirement, require accommodation to their needs and interests. | |
| Mechaber 2008 (37) | Interview with a representative of each team and questionnaire (2005) | No info | Physician job satisfaction, job stress, burnout, job control, and intention to leave. | PT Primary care physicians are prevalent and satisfied, experience better work control and less burnout than FT equivalents. PT and FT PCPs have similar patient satisfaction and trust. | -Results may not be generalisable to other parts of the county, or to sub-specialists.<br><br>-Cross-sectional data, why it is not possible to determine whether PT statisticss predicts or results from burnout.<br><br>-Response bias may be a problem due to the small number of patients per physician.<br><br>-Single item measures were used to assess patient satisfaction and trust |
| Murray 2000 (38) | March and May 1997 (physician survey): unclear when patient surveys were conducted | 51.7% response rate (physician survey) | Physician satisfaction<br><br>Patient assessment of physician (access, continuity, comprehensiveness (knowledge of the patient, preventive counselling), integration, clinical interaction, interpersonal treatment, satisfaction and trust). | Equal performance of PT and FT physicians in most aspects of care as experienced by patients.<br><br>Physician satisfaction? | -Cross-sectional study design why causality cannot be inferred<br><br>-Study is limited to ensured adult patients, and other more vulnerable patients groups may have a greater need of continuity.<br><br>-Technical aspects of physician performance are unassessed. |
| Panattoni 2014 (39) | From January to December 2010; survey | 21.2% | Continuity and access to care, satisfaction | Physician FTE was positively associated with continuity of care, and better access to care, but worse patient satisfaction scores. | -Cross-sectional design, which only identifies associations.<br><br>-The study used panel level information of patient characteristics and not the respondents 'actual characteristics.<br><br>-Low response rate, may induce non-response bias.<br><br>-Results limited to larger medical practices that already have adopted policies in support of PT physicians.. |

| | | | | | |
|---|---|---|---|---|---|
| Parkerton 2003 (40) | Medical group generated measures collected in 1998. | NA | Patient satisfaction<br><br>Diabetic and cancer screening | PT physicians had significantly higher rates for cancer screening diabetic management, and for patient satisfaction. After controlling for potential confounders, there was no significant association with patient satisfaction. | -The physicians review their performance data quarterly, which may facilitate change.<br><br>-No measure of provider satisfaction.<br><br>-Composition of clinical team specific to the organisation.<br><br>-Patient sociodemographic were not considered.<br><br>-Measures used may not fully account for all aspects of the patient-provider satisfaction process. |
| Rosland 2015 (25) | Data collected from July 2010 to December 2012 (the PCP in person encounters) and for the<br><br>CAHPS-PCMH data during October 2012 | 2881 of 5476 (53%) | Timely urgent appointments, waiting time, timely routine care appointments, PCP knowledge of medical conditions, rate of specialist care. | "PT performance appeared worse when using measures focused on same-day access to patient's usual PCP. However, clinic level same-day access, same-week access to the usual PP, and overall continuity were similar for patients of PT and full-time PCPs. Measures of in-person access to a usual PCP do not capture alternate access approaches encouraged by PCMH, and often used by PT providers, such as team-based on non-face-to-face care." | Data only from two sites, why results may not be generalisable to other VA healthcare clinics or other non-VHA clinics.<br><br>Data did not include information on urgent requests that did not result in the PCP appointment being completed, or other non-VHA encounters.<br><br>Survey response rate was moderate, but not high. |

CAHPS-PCMH: add here; FT: full time; FTE: full time equivalent; NA: not applicable; PCP: primary care physicians; PT: part-time; VHA: veterans' health affairs

Studies of mixed occupations (N=2):

| **Study First author (reference no.)** | **Data collection** | **Response rate** (%) | **Outcomes** | **Main (narrative) results** | **Limitations** |
|---|---|---|---|---|---|
| **First author Year** | **Data collection** | **Response rate (%)** | **Outcomes** | **Main (narrative) results** | **Limitations** |
| Kogan 2018 (41) | Register data from 2008 to 2011 | N/A | Length of stay, mortality rate, urgent repeated hospitalisations, physician availability, | PT employment does not harm and may even enhance medical performance, but may be detrimental to operational performance. | -Data from two departments only (and also few PT physicians).<br><br>-Ratios studied had only two values that may not |

| | | | | | |
|---|---|---|---|---|---|
| | | | speed of response, clothing and bedding replacement, reception and release process. | | capture the impact of PT work.<br><br>-Regression coefficients were not high, and there may be other factors that may explain the differences found .<br><br>They studiy the relationship between operational and medical performance, but the main focus here was not between PT and FT work. |
| Zeytinoglu 2015 (29) | Data collection period: 2002<br><br>Questionnaires were mailed to all workers within 11 organisations providing home health care in a mid-sized city in Ontario, Canada, except the CEOs.<br><br>Validated questionnaires were used. | 1,311 (67%*) responded to the survey,<br><br>990 of these worked in clients homes, and were eligible for this study<br><br>Note: only 532 remained in the analysis (458 had missing data and were excluded) | Stress symptoms (MSDs) | PT (and casual work hours) and job insecurity are positively and significantly associated with stress. | Single location<br><br>HHC workers with MSD may be more likely to respond to survey<br><br>Cross-sectional data- impossible to make causal inferences regarding whether stress may lead to MSD<br><br>Fifteen year old data – conditions may have changed<br><br>A large number of participants with missing data<br><br>Employability insecurity – a singleton measure with limited content validity |

CEO: add here; HHC; home health care; MSD: musculoskeletal disorders

# Appendix 9. Sources of funding in included studies

Sources of funding reported in the included studies (N=23)

| Study First author (reference no.) | Funding sources |
|---|---|
| Batch 2009 (19) | None stated |
| Burke 2000 (30) | This research was supported in part by the School of Business, York University and the Department of Psychology, York University. |
| Burke 2013 (2) | This work has been supported in part by the MEC (Spanish Ministry of Education and Science) grant number SEJ2007-67618. We also wish to express our gratitude to the Collegi Oficial d'Infermeres de Barcelona for their instrumental assistance. |
| Dwan 2014 (20) | The authors disclose receipt of the following financial support for the research, authorship, and/ or publication of this article: The Australian Primary Health Care Research Institute, Australian National University, Australia, and ACT Health, Canberra, Australian Capital Territory, Australia. |
| Fairchild 2001 (21) | None stated |
| Helligers 2008 (22) | This study was financed by ZonMW (the Netherlands Organisation for Health Research and Development). It was part of the program: "PT work by medical specialists" |
| Jamiesson 2008 (23) | None stated |
| Kapborg 2000 (32) | This study was supported by the Scientific Council in Jönköping, Sweden. |
| Keil 2000 (34) | This research was supported by grants from the Ontario Ministry of Health and from the Social Science and Humanities Research Council of Canada |
| Kogan 2018 (41) | None stated |
| Lane 2004 (35) | None stated |
| McAiney 2017 (33) | None stated |
| McIntosh 2008 (24) | None stated |
| Mechaber 2008 (37) | Funding for this study was provided by the Agency for Healthcare Research Quality, grant number 5 R01 HSO11955 |
| Murray 2000 (38) | None stated |
| Oppel 2018 (36) | The study was conducted by the authors without any external financial support |
| Panattoni 2014 (39) | The work was generously funded by AHRQ R18 HS019167 |
| Parkerton 2003 (40) | This study received financial support from the Blue Cross Blue Shield of Michigan Foundation, Rackham Graduate School, and the Department of Health Management and Policy at the University of Michigan |
| Rosland 2015 (25) | This work was undertaken as part of the Veterans Health Administration's PACT Demonstration Laboratory initiative, which is funded by the VHA Office of Patient Care Services. Dr Rosland is a VA HSR&D Career Development Awardee. |
| Street 2011 (26) | This study did not receive funding from an external sponsor. The study design, data collection, analysis and interpretation of data, writing of the report and submission of paper for publication was supported by the collaboration of staff from the health service and university. |
| Telljohann 2004a (27) | None stated |
| Telljohann 2004b (28) | This study was funded by a joint grant by the US Department of Justice, the US Department of Education, and the US Department of Health and Human Services as part of the Safe Schools/Healthy Students Grants (S184L000002) |
| Zeytinoglu 2015 (29) | This study was funded by operating grants from the Canadian Institutes of Health Research [#RCI-0965-06] and the Workplace Safety and Insurance Board of Ontario [RAC #00011], and research staff funding from the Program for Research on Social and Economic Dimensions of an Aging Population (SEDAP II) supported by the Social Sciences and Humanities Research Council of Canada. |

# Appendix 10. Concepts, aims, theory, and methods used in included studies

Studies of nurses (N=11):

| Study First author (reference no.) | Concept (description of problem) | Aim | Theory | Methods |
|---|---|---|---|---|
| Burke 2000 (30) | Changes in the employer-employee relationships. Contracts restructured to provide flexibility for employers. | To investigate work status congruence, work outcomes and psychological well-being among nurseing staff. | - | Questionnaire (mail out) |
| Burke 2013 (2) | Nursing is described as stressful and dissatisfying .One hand there is a shortage of nurses, on the other nurses chose to work part time, Nursing in Spain has devoted much attention to burnout. | To examine the reasons given by nurses for working PT, comparing work experiences, satisfaction and psychological well-being of nursing staff working full-time versus PT, and identifying possible antecedents and sources of leverage to encourage PT nurses to work full-time. | - | Questionnaire (on line) |
| Jamiesson 2008 (23) | Current and projected nursing shortages and expectations of effective workforce. | To explore and describe phenomena and to construct theory that explains the realities of PT nursing | Grounded theory | Semi-structured interviews |
| Kapborg 2000 (32) | Nurses being forced into working PT, and how this may affect their life and attitudes to work. | To investigate how PT work has effected nurses life situation, and whether it has affected their attitudes to worki as nurses. | . | Questionnaire (mail out) |
| Keil 2000 (34) | Non work status congruency can affect attitudes to work negatively (and perceptions of work re-organisation) | To examine how work status incongruency may affect job attitudes and reactions to organisational restructuring among PT nurses. | | Questionnaire (on site) |
| Lane 2004 (35) | Experienced career disadvantages for female PT nurses. | To examine the theoretical explanations of the employment disadvantage experienced by many female PT workers. | Hakim 1998, preference theory | Questionnaire (main out) |
| McAiney 2017 (33) | Physicians (MD) spend less time in LTC homes. The Nurse practitioner (NP) role has been introduced to enhance availability and access to primary care.NP and MD collaboration around residents in long-term care facilities is important in order to provide optimal care, but little is known about how it works. | To explore NP–MD collaboration in LTC homes. | .- | National survey |
| Oppel 2018 (36) | Hospitals have been responding to financial pressure and nurse shortages through reductions in nurse staffing that may compromise patient care. | To examine the relationship between nurse staffing patterns and patients' experiences of care in hospitals with a particular focus on staffing flexibility. | - | Secondary hospital data from two sources |
| Street 2011 (26) | Communication and handover practices may sometimes be suboptimal, which may jeopardise the quality of care. | To identify the strengths and limitations in current practice of nursing clinical handover and implement a new bedside handover practice. | - | Questionnaire (on site) |
| Telljohann 2004 (27) | School attendance is essential for a child's academic success. Unfortunately, children with asthma are at a greater academic risk | To determine whether employing full-time elementary school nurses could reduce the number of absences among students with | - | Prospective data collected by school-nurses |

| | | | | |
|---|---|---|---|---|
| | because they have greater school absenteeism than children without asthma. | asthma more than in schools with part-time nurses. | | |
| Telljohann 2004b (28) | As above, or check this other paper | To examine differences in student access to health services between school with FT nurses (5 days a week) with schools with PT nurses (2 days a week). | - | Prospective data collected by school-nurses |

FT: full-time; LTC: long-term care; MD: medical doctor; NP: nurse practitioner; PT: part-time;

Studies of physicians (N=9):

| Study First author (reference no.) | Concept (description of problem) | Aim | Theory | Methods |
|---|---|---|---|---|
| Dwan 2014 (20) | Health workforce shortages in particular number of GPs needs to be factored into workforce planning. | To investigate the nature and extent of paid and unpaid work, why some chose to work less than FT, and whether sessional work reflects lack of commitment to patients and profession. | - | Qualitative (Semi-structured interviews) |
| Fairchild 2001 (21) | Beliefs that part time primary care physicians are less productive and provide lower quality care than full time physicians are addressed. | To compare productivity, quality of preventive care, patient satisfaction, and risk-adjusted resource utilization of part time and FT PCPs. | - | Retrospective cohort study |
| Heiligers 2008 (22) | PT work discussion about responsibility for the continuity and quality of care. It has been argued that a minimum of hours worked is necessary in order to prevent patients and colleagues suffering from undesirable consequences, such as a lack of information or communication errors. Most transfer of information is provided in social relations within informal networks at work. | To investigate whether there are any differences in informal work- related networks of PT and FT working doctors and to find out to what extent these differences are related to individual characteristics and characteristics of the team as a whole. | Yes | Qualitative/mixed |
| McIntosh 2008 (24) | Is a part-time anaesthesiologists as competent as FT ditto? Can they /are they assigned simpler cases than FT equivalents? | To review the quality, economic and safety issues surrounding PT clinical anaesthesia. | - | Literature review |
| Mechaber 2008 (37) | The medical profession is facing multiple challenges including inadequate recruitment, poor retention and burnout. A changing workforce add to these challenges. | To determine the relationship between PT status , work-place conditions and physician outcomes | - | Cross-sectional (part of longitudinal study) |
| Murray 2000 (38) | Physicians work long hours due to increased pressure from the government , the healthcare organisations and patients, but need to keep both high quality and productivity. | To examine the relationship between the number of hours physicians work and patient's assessment of the physician. | - | Cross-sectional |
| Panattoni 2014 (39) | Increased demand of reduced clinical hours among physicians, and increased demand of primary care services by the ageing population. | To examine the relationship between a clinician FT equivalent (FTE) continuity of care, access to care, and patient satisfaction with the physician. | - | Cross-sectional |
| Parkerton 2003 (40) | The employment of part-time physicians has increased, but the impact of | To determine whether patient outcomes vary depending on physicians clinical hours. | - | Cross-sectional (register data) |

| | | | | |
|---|---|---|---|---|
| | part-time practice on patient outcomes is not known. | | | |
| Rosland 2015 (25) | Common patient-centred medical home performance measures value access to a single PCP, which may have un-intended consequences for clinics that rely on part-time PCPs and team-based care. | To examine the impact of PT- PCP availability on performance in current and alternate VHA measures of urgent access. | - | Survey data, and data on patient encounters. |

FT: full-time; FTE: full-time equivalent; GP: general practitioner; PCP: primary care physician; PT: part-time;

Studies of mixed occupations (N=2):

| Study First author (reference no.) | Concept (description of problem) | Aim | Theory | Methods |
|---|---|---|---|---|
| Kogan 2018 (41) | Shortage of experienced surgeons. It has also been suggested the PT surgeons may be less committed to work, difficult to motivate, and care less about their patients and the department. Research findings however have been inconsistent as well as inconclusive on this point. | To explore how reliance on PT staff affects operational and medical performance in two general surgery departments. | - | Register study |
| Zeytinoglu 2015 (29) | Non-standard work hours (PT and casual work) and job insecurity, can cause stress and MSDs.<br>'Non-standard work' is defined as either PT or casual. | To examine the associations between home care workers health and non-standard hours and insecurity. | Yes* | Survey |

* The theories on stress and MSD (Kourinka et al.1995 and Sauter and Swanson 1996); MSD: musculoskeletal diorders;
PT: part-time

NIPH

Published by the Norwegian Institute of Public Health
September 2019
P.O.B 4404 Nydalen
NO-0403 Oslo
Phone: + 47-21 07 70 00
The report can be downloaded as pdf
at www.fhi.no/en/publ/