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COV.12: Impacts of absenteeism in doctors and nurses in primary care and community care

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Research Question

Is there a differing impact of absenteeism between doctors and nurses in primary care and community care staff groups in the UK compared to normal practice/business as usual?

Verdict

There is a lack of evidence on the impacts of absenteeism of healthcare workers in primary and community care.

We looked for indirect evidence to answer the research question and found evidence that in some roles nurses may be suitable as substitutes for doctors in primary care. In particular, nurse-doctor substitution can have positive impacts on patient satisfaction; impacts on clinical outcomes were also similar or positive for nurse-led care versus doctor-led care.

We also found some limited evidence on the impacts of absenteeism in secondary care that were suggestive of an association between nurse absenteeism and poorer patient satisfaction and health outcomes, though this evidence had high risk of bias and results had been selectively reported.

What does the evidence say?

Number of included studies/reviews (number of participants)

No studies strictly matched the inclusion/exclusion criteria of our review.

However, we found 3 systematic reviews that may be relevant for the research question. These matched most inclusion criteria but did not assess the impact of absenteeism (wrong intervention/exposure) and instead looked at the impact of nurses working as substitutes for doctors. There was considerable overlap in the included studies in these reviews. One review (Horrocks 2002) included 11 RCTs and 23 prospective observational studies, one (Laurant 2018) included 18 RCTs, and one (Martinez-Gonzalez 2014) included 11 RCTs.

We also found 2 primary retrospective studies that may be relevant for the research question. These matched most inclusion criteria but were not in primary care (wrong population) and instead were in a hospital setting. One study (Duclay 2015) included 2188 patient satisfaction surveys and the other (Unruh 2007) included 72 observations from six inpatient units in 2004.

Main findings

Given that **no studies strictly matched the inclusion/exclusion criteria of our review** we report findings separately for the impact of nurse-doctor substitution and the impact of absenteeism in hospitals.

Nurse-doctor substitution
In some roles, nurses may be suitable as substitutes for doctors in primary care. There is some evidence that nurse-led care may improve blood pressure (Laurant 2018, Martinez-Gonzalez 2014), patient mortality (Laurant 2018), and some other clinical measures.

There is also evidence nurse-doctor substitution can have positive impacts on patient satisfaction (Horrocks 2002, Laurant 2018) and quality of life (Laurant 2018). Consultations were typically longer in nurse-led care and there was a higher number of attended return visits (Horrocks 2002, Laurant 2018).

Absenteeism in hospital settings
Weekend absenteeism of nurses was associated with poorer patient relationships with healthcare staff (Duclay 2015) and short-term absenteeism of nurses was associated with poorer patient perceptions of the hospital environment (Duclay 2015).

High absenteeism of registered nurses when combined with high patient load was associated with higher deaths and increased use of restraints (Unruh 2007). An increased number of incident reports was associated with higher patient load, but not with increased absenteeism (Unruh 2007).

Strength of the evidence

The strength of the evidence is low as there were **no studies that directly addressed our research question**.

Risk of bias in included systematic reviews investigating nurse-doctor substitution ranged from low to unclear. Evidence on clinical outcomes was not strong, although there was good evidence suggesting that patient satisfaction improved with nurse-led care.

Primary studies were at high risk of bias. The observational data were collected retrospectively and could only be used to investigate associations between absenteeism and patient outcomes. There was also strong evidence of selective reporting in both studies.

Summary of searches

We first performed an initial project screen to identify if there was any evidence that would answer the question from any of the resources listed in Table 3. As we did not find information here to answer the question we performed a rapid systematic review searching in Medline, Cochrane Database of Systematic Reviews, and Cochrane Central Register of Controlled Trials. Search terms and search results are given in Table 4. We hand-searched for relevant references from studies for which we obtained full texts. Full texts were screened by two reviewers and any disagreements were discussed to come to a unanimous decision on a study's inclusion/exclusion. A PRISMA flow diagram for the search is shown in Figure 1.

We included any studies measuring any impact of absenteeism of doctors and/or nurses in primary/community care settings, assessed over any time frame. We excluded any case studies, letters, opinion pieces or conference abstracts. Studies that measured absenteeism in non-healthcare professionals were excluded. We also excluded any studies not in either English or Spanish. Title/abstract screening was performed using Rayaan (Ouzzani et al., 2016) and full texts were screened using Zotero (Center for History and New Media, n.d.).

Risk of Bias was assessed (by one reviewer per study) using ROBIS for systematic reviews (Whiting et al., 2016) and personal judgement for primary non-randomised studies.

Date question received: 3rd April 2020
Date searches conducted: 4th April 2020
Date answer completed: 6th April 2020

Additional Information – potential future use of CPRD primary care data

The University of Bristol holds a licence to access anonymised UK primary care electronic medical record information (the Clinical Practice Research Datalink) for projects benefiting the public good. The CPRD includes around 20% of currently active UK GP practice population. This could be used to explore the workloads of different types of healthcare workers in primary care over time (e.g., Hobbs et al., 2016), or to compare work patterns in regions of low versus high COVID-19. CPRD is updated every month, but requires project approval from an Independent Scientific Advisory Committee – this can take several weeks although COVID-19 requests are being prioritised.

References

Center for History and New Media. (n.d.). *Zotero reference management software* (Version 5.0.85) [Computer software].

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Horrocks, S., Anderson, E., & Salisbury, C. (2002). Systematic review of whether nurse practitioners working in primary care can provide equivalent care to doctors. *The BMJ*, *324*(7341), 819–823.

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Martínez-González, N. A., Tandjung, R., Djalali, S., Huber-Geismann, F., Markun, S., & Rosemann, T. (2014). Effects of Physician-Nurse Substitution on Clinical Parameters: A Systematic Review and Meta-Analysis. *PLoS ONE*, *9*(2), e89181. https://doi.org/10.1371/journal.pone.0089181

Ouzzani, M., Hammady, H., Fedorowicz, Z., & Elmagarmid, A. (2016). Rayyan—A web and mobile app for systematic reviews. *Systematic Reviews*, *5*. https://doi.org/10.1186/s13643-016-0384-4

Unruh, L., Joseph, L., & Strickland, M. (2007). Nurse absenteeism and workload: Negative effect on restraint use, incident reports and mortality. *Journal of Advanced Nursing*, *60*(6), 673–681. https://doi.org/10.1111/j.1365-2648.2007.04459.x

Whiting, P., Savović, J., Higgins, J. P. T., Caldwell, D. M., Reeves, B. C., Shea, B., Davies, P., Kleijnen, J.,

    & Churchill, R. (2016). ROBIS: A new tool to assess risk of bias in systematic reviews was

   developed. *Journal of Clinical Epidemiology*, *69*, 225–234.

    https://doi.org/10.1016/j.jclinepi.2015.06.005

Disclaimer

This report has not been peer-reviewed; it should not replace individual clinical judgement and the sources cited should be checked. The views expressed in this report represent the views of the authors and not necessarily those of the University of Bristol, the NHS, the NIHR, or the Department of Health and Social Care. The views are not a substitute for professional medical advice.

Figures:

Figure 1: PRISMA flow diagram

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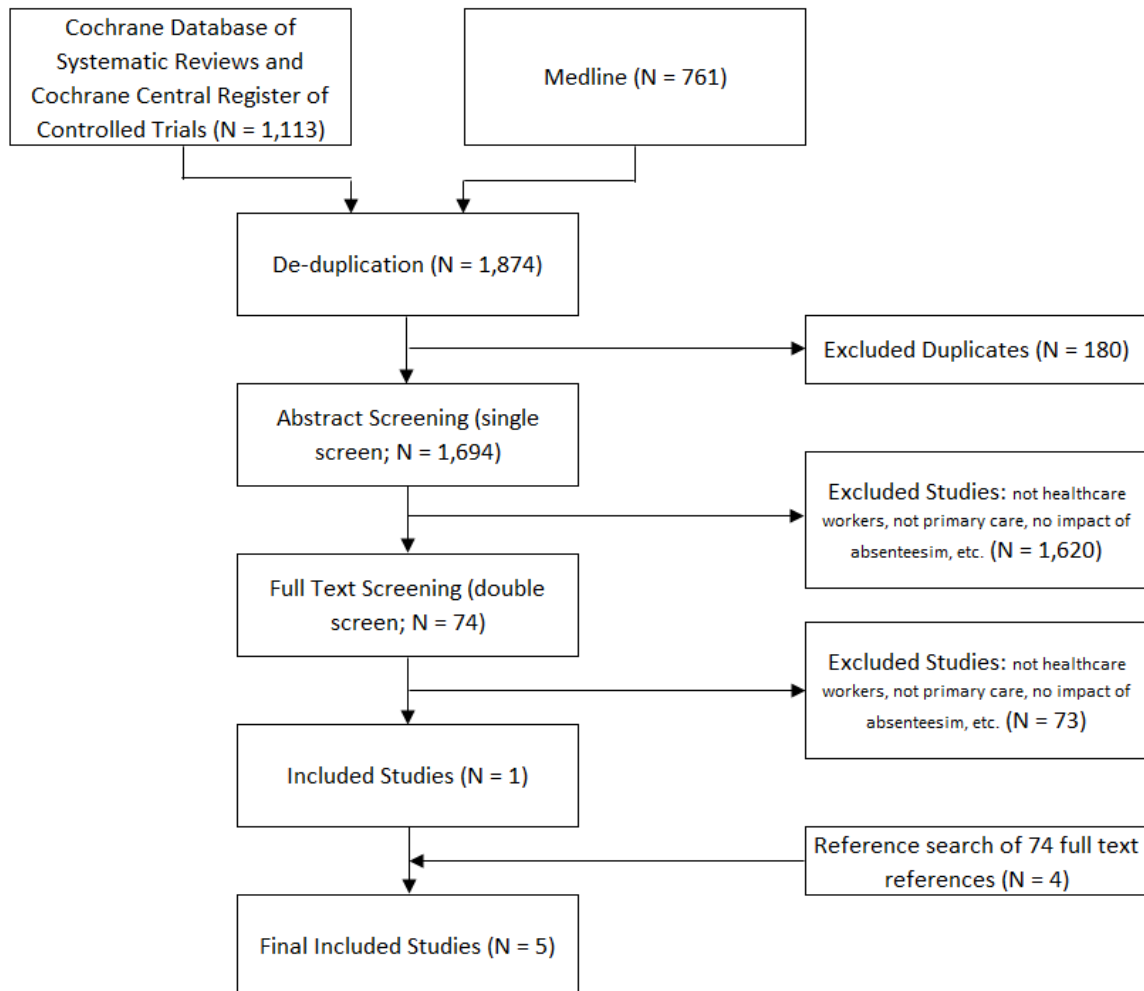
Systematic Reviews

Table 1: Included systematic review characteristics

Author (year)	Search Date	Inclusion criteria	Number of included studies	Summary of results	Risk of bias
Horrocks (2002)	2001	**Population:** Patients with undifferentiated health problems in a primary care setting in developed countries (Europe, North America, Australasia, Israel, South Africa and Japan) **Intervention/exposure:** Nurses providing care at first point of contact **(not related to absenteeism and so does not meet our formal inclusion criteria)** **Comparator:** Doctors providing care at first point of contact **Outcomes:** Patient satisfaction, health status, costs, process of care	11 RCTs, 23 prospective observational studies	Patients were more satisfied with care by nurses (5 RCTs; 3890 participants: SMD = 0.27 (0.07, 0.47)). Nurses has longer consultations (5 RCTs; 4563 participants: WMD = 3.67 (2.05, 5.29) Nurses made more investigations (5 RCTs; 5469 participants: OR = 1.22 (1.02, 1.46) No significant differences were found in the number of prescriptions (4 RCTs), return consultations (6 RCTs) or referrals (2 RCTs). Other outcomes were not suitable for meta-analysis: Quality of care was reported heterogeneously in 6 RCTs. Some studies suggested nurses gave more information to patients, made more complete records, and communicated better.	**Overall risk of bias: Unclear (ROBIS)** Study eligibility criteria: Unclear risk Identification and selection of studies: Low risk Data collection and study appraisal: Unclear risk Synthesis and findings: Unclear risk

Author (year)	Search Date	Inclusion criteria	Number of included studies	Summary of results	Risk of bias
				• 7 RCTs reported on health status but showed no significant differences.	
Laurant (2018)	March 2017	**Population:** Patients presenting with any physical complaint in a primary care setting **Intervention/exposure:** Qualified nurses working as substitutes for doctors **(not related to absenteeism and so does not meet our formal inclusion criteria)** **Comparator:** Doctors providing care as normal **Outcomes:** Patient: Mortality, health status, patient satisfaction, quality of life, compliance, knowledge, preference for doctor/nurse Process: Practitioner adherence to clinical guidelines, practitioner healthcare activity, frequency/length of consultations, number of return visits, prescriptions, tests, referrals **Exclusions:** Non-randomised and controlled before-after studies, studies in which nurses provide supplementary care to doctors	18 RCTs	Studies suggest care by nurses probably generates similar or better health outcomes for a broad range of patient conditions (low- or moderate-certainty evidence). Nurse-led primary care may lead to fewer deaths (low-certainty) (RR=0.77 (0.57,1.03)) Blood pressure outcomes are probably slightly improved with nurse-led care (systolic blood pressure 3 RCTs MD=-3.73 (-6.02, -1.44); diastolic blood pressure 2 RCTs MD=-2.54 (-4.57, -0.52)). Moderate-certainty evidence	**Overall risk of bias: Low/unclear (ROBIS)** Study eligibility criteria: Low risk Identification and selection of studies: Low risk Data collection and study appraisal: Low risk Synthesis and findings: Unclear risk

Author (year)	Search Date	Inclusion criteria	Number of included studies	Summary of results	Risk of bias
				Other clinical outcomes are similar with moderate-certainty evidence (HbA1c, total cholesterol). Self-reported measures of health status were similar with low-certainty evidence (pain, disease activity score, physical functioning). Patient satisfaction improved with nurse-led care (7 RCTs SMD=0.08 (0.01, 0.15) (moderate-certainty)) Quality of life is probably slightly higher in nurse-led care (6 RCTs SMD=0.16 (0.00, 0.31) (low-certainty). Consultation length longer with nurse-led care (7 RCTs SMD=0.38 (0.22, 0.54)) (moderate-certainty). Attended return visits were higher in nurse-led care (4 RCTs RR=1.19 (1.07, 1.33) (low-certainty) No difference in scheduled return visits, number of prescriptions, number of tests/investigations (low-certainty) Nursing level varied between studies. Some looked at nurses as first contact, ongoing care, and/or	

Author (year)	Search Date	Inclusion criteria	Number of included studies	Summary of results	Risk of bias
				follow-up of patients with chronic conditions.	
Martinez-Gonzalez (2014)	August 2012	**Population:** Patients presenting with any complaint (physical, mental or substance abuse) in a primary care setting **Intervention/exposure:** Care from nurses **(not related to absenteeism and so does not meet our formal inclusion criteria)** **Comparator:** Care from doctors **Outcomes:** Clinical parameters that detected changes in the clinical status of patients **Exclusions:** Non-randomised studies, studies in which nurses provide supplementary care to doctors, non-English language	11 RCTs	In 5 RCTs nurse-led care reduced systolic blood pressure (WMD: -4.27 (-6.31, -2.23)) though not conclusively diastolic blood pressure (WMD: -1.48 (-3.05, 0.09)) In 4 RCTs there were no conclusive differences in nurse/physician-led care for total cholesterol, LDL, HDL or triglycerides. In 4 RCTs there were no differences in nurse/physician-led care for reducing HbA1c (WMD=0.12 (-0.13, 0.37)). There were no differences in nurse/physician-led care in measures of lung function, incontinence, Parkinson's disease,	**Overall risk of bias: Unclear (ROBIS)** Study eligibility criteria: Unclear risk Identification and selection of studies: Low risk Data collection and study appraisal: Unclear risk Synthesis and findings: Unclear risk

Author (year)	Search Date	Inclusion criteria	Number of included studies	Summary of results	Risk of bias
				urine sodium excretion or serum creatinine. Reported median levels of urinary albumin excretion were higher in nurse-led care (no statistical testing). Significantly more patients with nurse-led care had a decrease in some measures of cardiac function (functional exercise capacity, N-terminal pro-brain natriuretic peptide, left ventricular end-diastolic volume) but not in others (C-reactive protein, left atrial size index, left ventricular mass index, early-late mitral valve flow velocity). 1 RCT showed HIV/AIDS patients with nurse-led care had significantly lower CD4 cell counts.	

Numbers given in brackets are 95% confidence intervals unless specified otherwise
OR: Odds ratio
RR: Risk ratio
SMD: Standardised mean difference
WMD: Weighted mean difference

Primary studies

Table 2: Included primary studies characteristics

Author (year)	Inclusion criteria	Number	Summary of results	Risk of bias
Duclay (2015)	Routinely collected Registered Nurse (RN) and Nurse Assistant (NA) absenteeim data (for RN and NA in permanent posts) and patient satisfaction questionnaire responses from all clinical departments in a university hospital in France in 2010 **(population is not primary care and therefore does not match our formal inclusion/exclusion criteria)**.	1443.9 equivalent full-time posts for RN; 1288.2 equivalent full-time posts for NA; 2,188 patient satisfaction responses (6.5% return rate)	Absenteeism: 9% for RN, 10.9% for NA *Unadjusted correlations for RN* In Table 3 crossing 3 satisfaction topics (clarity of information, relationship with staff, hospital environment) and 5 absenteeism measures (overall, medical reasons, non-medical reasons, starting on weekend (Fri, Sat, Sun), short-term (5 days or less), the following were statistically significant: • Non-medical absence and relationship with staff ($r = -0.68$, $p < 0.05$) • Weekend absence and relationship with staff ($r = -0.71$, $p < 0.05$) *Unadjusted correlations for NA* Only significant results was: • Short-term absence and hospital environment ($r = -0.73$, $p < 0.05$) Model adjusted for patient and department factors: Weekend absence and relationship with healthcare staff ($p < 0.05$ for RN and RA; no statistic provided) Short-term absence and hospital environment ($p < 0.05$ for NA; no statistic provided)	**High** – retrospective observational study, low return rate from patient satisfaction questionnaires likely to be biased in who responds, although some patient characteristics were adjusted for in the models. They have selectively reported the few statistically significant correlations from a table of correlations.
Unruh (2007)	**Population:** Records from six inpatient units in a hospital measured over 12 months **(population is not primary care and therefore does not match our formal inclusion/exclusion criteria)**. **Intervention/exposure:** Absenteeism (number of hours of unplanned absences)	72 observations (12 monthly observations for 6 units)	Higher registered nurse (RN) absenteeism in combination with higher patient load was associated with higher use of restraints ($p < 0.01$) and lower use of alternatives to restraints ($p < 0.01$) but absenteeism alone was not significant.	High – retrospective observational study, selective reporting of outcomes (only RN and not LPN or NA)

Author (year)	Inclusion criteria	Number	Summary of results	Risk of bias
	Outcomes: Use of restraints, number of incident reports, deaths, length of patient stay, use of alternatives to restraints		An increased number of incident reports was associated with increased patient load ($p < 0.05$) but not by absenteeism. An increased number of deaths was associated with increased RN absenteeism when combined with high patient load ($p < 0.001$). Absenteeism was not associated with length of patient stay. No regressions were statistically significant for licensed practical nurses (LPN) or nursing assistants (NA) so these were not reported.	

Search details

Initial project screen:

Table 3: Project resources that were initially screened (pre-search)

Source	Link	Relevant Evidence Identified
CEBM, University of Oxford	https://www.cebm.net/covid-19/	-
Evidence aid	https://www.evidenceaid.org/coronavirus-resources/	-
Cochrane Methodology Review Group	Infection control and prevention: https://www.cochranelibrary.com/collections/doi/SC000040/full Evidence relative to critical care: https://www.cochranelibrary.com/collections/doi/SC000039/full	-
Department of Health and Social Care Reviews Facility	http://eppi.ioe.ac.uk/COVID19_MAP/covid_map_v3.html	-
UCSF COVID19 papers	https://ucsf.app.box.com/s/2laxq0v00zg2ope9jppsgtnv1mtxd52z	-
PHE Knowledge and Library Services	https://phelibrary.koha-ptfs.co.uk/coronavirusinformation/	-
WHO Global Research COVID19 database	https://www.who.int/emergencies/diseases/novel-coronavirus-2019/global-research-on-novel-coronavirus-2019-ncov	-
CDC COVID19 guidance	https://www.cdc.gov/coronavirus/2019-ncov/hcp/index.html	-

Search for SRs and Primary studies

Table 4: Search strategies for each database

Source	Search strategy	Number of Hits	Relevant evidence identified
Cochrane Library (4th April 2020)	1. MeSH descriptor: [Primary Health Care] explode all trees 2. *primary care* 3. *community care* 4. MeSH descriptor: [Absenteeism] explode all trees 5. *absentee* 6. "sick leave" OR "sick day" OR "sickness day" OR "sickness leave" OR "sick absence" OR "sickness absence" 7. (1 OR 2 OR 3) AND (4 OR 5 OR 6)	1,113	(Laurant et al., 2018)
Medline (4th April 2020)	1. Primary Health Care/ 2. Community Mental Health Services/ OR Community Health Services/ 3. Absenteeism/ 4. Absentee* mp. [mp=title, abstract, original title, name of substance word, subject heading word, floating sub-heading word, keyword heading word, organism supplementary concept word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier, synonyms] 5. "sick leave" OR "sick day" OR "sickness day" OR "sickness leave" OR "sick absence" OR "sickness absence" 6. Primary care* mp. [mp=title, abstract, original title, name of substance word, subject heading word, floating sub-heading word, keyword heading word, organism supplementary concept word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier, synonyms]	761	-

	7. Community care* mp. [mp=title, abstract, original title, name of substance word, subject heading word, floating sub-heading word, keyword heading word, organism supplementary concept word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier, synonyms] 8. (1 OR 2 OR 6 OR 7) AND (3 OR 4 OR 5)		
74 full text reference lists	No specific search strategy	-	(Duclay et al., 2015; Horrocks et al., 2002; Martínez-González et al., 2014; Unruh et al., 2007)