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Abstract

BACKGROUND

Social determinants of health (SDOH) critically impact on population and individual health outcomes and underpin health inequalities, yet information on individual-level social risk are not collected routinely in healthcare settings.

AIM

The aims of this study are to investigate the feasibility of SDOH screening in primary care, validate a proposed screening tool, explore acceptability of screening, and estimate the burden of social need in the study population.

DESIGN AND SETTING

This explanatory sequential mixed-methods study is conducted in UK general practice.

METHOD

In Work Package (WP) 1, we will compare methods for collecting social determinants of health (SDOH) data using a screening tool: text message, post with online option, telephone, and opportunistic collection in consultations. Linked medical records will describe characteristics of patients with social needs and estimate prevalence. We will also assess reliability and validity of the screening tool.

In WP 2, patient interviews will explore screening acceptability, including barriers and facilitators. Focus groups and interviews with GP practice staff and community healthcare professionals will examine views on screening and its integration into routine workflows. Data will be analysed using Braun and Clarke's thematic analysis.

CONCLUSION

Identifying those with unmet social needs will potentially: support clinicians to provide better personalised care, improving health outcomes; provide better information on local populations; allow for targeted support for those with unmet needs; help develop local services; and inform public health policies to reduce health inequalities. Results from this study will inform a randomised controlled trial in a larger programme of work.

What was previously known and what this research will add

Previous evidence has demonstrated that collecting SDOH data may result in broad benefits to patient care, including better targeted, individualised care, more accurate referrals, reduced hospitalisations and therefore cost savings. However, SDOH information is not routinely collected in UK primary care and there is no validated screening tool available for use in the UK setting. This study will validate the proposed screening tool and explore the feasibility of using it to collect individual level SDOH data in primary care.

Key words:

Social Determinants of Health; General Practice; Screening; Mixed Methods

INTRODUCTION

Non-medical factors, such as the environment in which people live and work, their education, finances, and social connections, often referred to as the social determinants of health (SDOH) critically influence individual and population health outcomes (1). These factors underpin health inequalities, with individuals from lower socioeconomic backgrounds facing worse ill-health (2). The link between health outcomes and social factors is well-established (3), and their impact on healthcare consumption is substantial: approximately a fifth of GP consultations are due to social issues, costing an estimated £400 million annually in the United Kingdom (UK) (4). Healthcare professionals regularly witness how SDOH lead to barriers to access, treatment adherence and care delivery (5).

Recognising the influence of social factors on health and well-being, as well as their role in lowering costs and reducing health inequalities is fundamental to effective social prescribing (6–8). Social prescribing link workers support people with unmet non-medical need (e.g. housing problems, loneliness, financial worries), typically through referral to community-based services (6). Referral to link workers often hinges on healthcare professionals identifying non-medical need; therefore, routinely and systematically gathering SDOH information could foster a more data-driven, consistent, and inclusive approach to referral. Despite this, individual SDOH information is not collected routinely in UK health and care settings (9). In England, deprivation is measured using the Indices of Multiple Deprivation, which are based on geographical area (10), and used to predict healthcare outcomes, for example QRISK (11). However, the assumption that individual level data is interchangeable with area level data is problematic. (12). Indeed, in areas with high variability this may result in inaccuracies in outcome data and services and resources being directed away from those with greatest need.

Evidence from North American studies demonstrates that SDOH screening can inform care planning, influence clinical decision making, improve access to treatments and increase referral to community services, e.g. via social prescribing link workers (13–16). Accurate SDOH data are associated with improved health outcomes, increased use of preventive and referral services, reduced hospitalisations, and cost savings (17–20). Studies with stakeholders highlight additional benefits, including improved diagnosis, personalised care, and patient–clinician relationships (20–22), although concerns remain regarding time, training, resources, and confidentiality (5,12).

Most SDOH screening tools have been developed for use in North America (21–26) and may lack relevance for UK context; for example, questions asking about ability to afford medical care. No single tool is widely recommended due to limited psychometric and pragmatic evaluation (24). To address this, Parry and colleagues developed a UK-specific 10-item screening tool following a systematic review and Delphi process, covering domains including financial security, housing, food adequacy, transportation, social connectedness, and employment (27). This study aims to assess the feasibility and acceptability of using

this tool in primary care, explore practical implementation issues, and generate preliminary data on the burden of social need to inform a larger programme of work.

METHOD

Study design

This project utilises an explanatory sequential mixed methods design over two work packages (WP). Quantitative data will be collected in WP) 1, followed by qualitative data in WP2, enabling a deeper understanding and explanation of the quantitative findings (28). Integration will be by joint display based on the Pillar Integration Process (29).

WP1 will consist of two stages:

Stage 1

Eligible participants will be invited to complete the screening tool in one of three ways: 1) Via Accrux questionnaire (SMS text messaging system used by UK GP Practices); 2) a postal pack, with options to either complete the tool on paper and return via post or complete online; and 3) by telephone. Additionally, there will be two options for opportunistic recruitment when patients visit participating general practices including during consultations and via a QR code on recruitment posters displayed in waiting areas. This will allow comparison of response rates for the different modes, and an estimation of the burden of social need.

Stage 2

In stage two, the past two years of medical record data will be extracted from the Electronic Health Record (EHR) of those who have completed the screening tool and consented to EHR access, enabling estimations of association of social need with healthcare burden.

In WP2 we will conduct semi-structured interviews with patients, and either focus groups or semi-structured interviews with primary care staff and community stakeholders to explore the acceptability and feasibility, and workflow integration of screening for SDOH in primary care.

Setting, sampling, and recruitment

Participants will be recruited from four general practices in the West Midlands, UK, that use the EMIS clinical system, Accurx software and are in the lowest deprivation quintile. A sample of 1200 people aged 18 years and over, registered at one of the four general practices will be invited to participate. Additional

participants will be opportunistically recruited during visits to their GP practice. As this is a feasibility study there is no formal sample size calculation. Recruitment to WP1 will take place across approximately four weeks with an invitation followed by a reminder two weeks later. See Table 1 for the inclusion and exclusion criteria.

Table 1: Inclusion and exclusion criteria

Inclusion criteria	Exclusion criteria
• Aged 18 years or older • Registered with a participating general practice during the study period • Able to provide informed consent	• Has declined to be contacted about research studies recorded in their EHR • Receiving palliative care, residing in a nursing home, or living with a severe mental illness and cognitive impairment

For WP2, a purposive sample of approximately 15 patients will be recruited from those who complete the screening tool and consent to further contact for the interview study. We will aim to achieve variation in terms of age, sex, ethnicity, type of social need reported, and data collection method used. Sample size will be informed by principles of information power as outlined by Malterud and colleagues (30). In addition, we will invite practice staff and community stakeholders, for example social prescribing link workers, to take part in one of 2-3 focus groups with 6-8 participants or an interview depending on their availability, allowing us to compare and contrast experiences across practices and to gather community perspectives (29). Community stakeholders will be invited through social media and professional networks. Interviews and focus groups will be conducted face-to-face or over video call (e.g. MS Teams) according to participant preference.

Quantitative data analysis

To characterise the sample for each practice, and to facilitate analysis of non-response bias, non-identifiable sample demographic data (including practice code, anonymised identifier, age and sex at birth, ethnicity and English indices of deprivation 2019 data) will be provided to the research team. Responders and non-responders will be compared by data collection method. Additionally, the numbers screened during a consultation will be compared to the number of consultations where screening did not take place (removing participants recruited via other arms) to give an approximation of how frequently clinicians are using the tool. Of those screened, we will calculate the proportion referred to a social prescribing link worker.

Cronbach's Alpha and factor analysis will be utilised to assess internal consistency, reliability, and validity of the screening tool. For convergent and discriminant validity, we plan to compare the tool's scores with

established measures that evaluate similar and distinct constructs. Finally, to determine criterion validity, we will analyse the correlation between the tool's scores and external criteria that are known indicators of the measured constructs.

Descriptive statistics will characterise the proportion of people with at least one reported social need, the frequency of different types of social need, referral to social prescribing link workers, and associations with multi-morbidity, polypharmacy and sick note certification. Logistic regression will be utilised to explore the association between social need and outcomes such as having more than one comorbidity as identified using the Charlson Comorbidity Index, polypharmacy defined as having five or more prescriptions, and sick note certification indicated by one or more issued sick note certificates.

Descriptive statistics will be used to calculate the mean and variance for the primary and secondary outcome measures across the study population. To account for clustering within general practices, the intra-class correlation coefficient (ICC) will be estimated using mixed-effects models. The ICC will quantify the proportion of total variance attributable to practice-level clustering, which is crucial for adjusting sample size calculations in a larger trial. Additionally, exploratory analysis will examine the distribution of outcome measures, including normality checks using histograms, skewness, and kurtosis statistics. Sensitivity analyses will be conducted to assess the robustness of these estimates across subgroups, such as age, gender, and deprivation status. These statistical parameters will be used to inform power calculations, ensuring that the larger trial is adequately powered to detect clinically meaningful differences in primary and secondary outcomes while accounting for clustering effects. Data analysis will be used to determine statistical parameters and resource requirements for a follow-up randomised controlled trial. The findings from this study, including analysis of medical record data, will contribute to the selection of the primary outcome measure for the future trial.

Qualitative data analysis

The interviews will be transcribed verbatim. Transcripts will be managed through NVivo software (version 14). Analysis will begin as the interviews are conducted, and the process will be iterative, with modification of the topic guide as themes are developed. Braun and Clarke’s six-step approach to thematic analysis will be applied to interview and focus group data (31). This approach involves transforming the audio data into written verbatim transcripts, generating initial codes, and then organising these codes into preliminary categories, sub-themes, and themes.

Integration

Integration will take place during sampling (a purposive sample of patients involved in WP1 will be invited to take part in WP2) and data collection (topic guides for interviews and focus groups will be informed by findings from WP1). We will compare and contrast quantitative and qualitative findings in a joint display

based on the Pillar Integration Process outlined by Johnson et al. (29). This involves the four stages of: listing quantitative and qualitative findings; matching quantitative and qualitative findings; checking against the original quantitative and qualitative findings; building a pillar that facilitates the development of meta-inferences (overall explanations or understanding created through integrating quantitative and qualitative components).

Patient and Public Involvement

Co-authors STT and FY are members of the Patient Advisory Group (PAG) for the study. They will participate in monthly project meetings, ensuring that a patient perspective is brought to key study decisions. The PAG, comprising up to eight members from the local community with diverse backgrounds, will meet up to four times throughout the study. The preferred meeting method (online or face-to-face) will be determined to ensure inclusivity. The PAG contributed to the study design, including developing participant facing material, and will play a critical role in developing topic guides for the qualitative work, interpreting results, and contributing to the dissemination strategy particularly in the development of an infographic summarising key findings from the study.

DISCUSSION

This mixed methods feasibility study will investigate the feasibility and acceptability of screening for social needs in primary care, using a newly developed, 10-question screening tool. It seeks to validate the screening tool, estimate the burden of need in the study population, and calculate associations of social need with burden of disease. In addition, it will use semi-structured interviews and focus groups with patients, primary care professionals, and community health workers, to explore the feasibility and acceptability of screening, facilitators and barriers, and workflow practicalities. Documenting social needs in the patient medical record may lead to better quality care through improvements in accuracy of population level data on deprivation and allow for targeted resource allocation for service development.

Strengths include the evaluation of multiple screening approaches using methods routinely available within primary care; in-depth patient interviews to explore perspectives on screening in a UK primary care context; qualitative research with primary and community care professionals to examine perceived benefits, training needs, opportunities for workflow integration and barriers to screening; and early identification of potential challenges to inform design of a larger study and future implementation into clinical practice. Weaknesses include small sample size. Findings will be disseminated via scientific conferences and open-access publication. Additionally, an infographic of key findings will be created for dissemination on social media, and via General Practice websites. The findings will also inform an application for a larger programme grant.

- **Authors contributions:** EP is the Principal Investigator for the study. All authors (EP, TW, DJ, DY, ST, JF, STT, FY, CJ) contributed to the methodological design of the study with DY and DJ taking the lead on statistical analysis. All authors (EP, TW, DJ, DY, ST, JF, STT, FY, CJ) contributed to refining the protocol and all reviewed and approved the final manuscript.
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- **Competing interests:** None
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- **Peer review**

  This protocol has not been peer reviewed by BJGP Open. The authors confirm that it has undergone external peer review by the NIHR. The authors confirm that we have provided an honest, accurate and transparent account of the revision with no important omissions.

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