

# Opportunities and challenges around adapting supported employment interventions for people with chronic low back pain

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RESEARCH PAPER



# Opportunities and challenges around adapting supported employment interventions for people with chronic low back pain: modified nominal group technique

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## ABSTRACT

**Purpose:** To identify and rank opportunities and challenges around adapting supported employment interventions for people with chronic low back pain (LBP).

**Methods:** Delegates from an international back and neck research forum were invited to join an expert panel. A modified nominal group technique (NGT) was used with four stages: silent generation, round robin, clarification, and ranking. Ranked items were reported back and ratified by the panel.

**Results:** Nine experienced researchers working in the fields related to LBP and disability joined the panel. Forty-eight items were generated and grouped into 12 categories of opportunities/challenges. Categories ranked most important related respectively to policy and legislation, ensuring operational integration across different systems, funding interventions, and managing attitudes towards work and health, workplace flexibility, availability of “good” work for this client group, dissonance between client and system aims, timing of interventions, and intervention development.

**Conclusions:** An expert panel believes the most important opportunities/challenges around adapting supporting employment interventions for people with chronic LBP are facilitating integration/communication between systems and institutions providing intervention components, optimising research outputs for informing policy needs, and encouraging discussion around funding mechanisms for research and interventions. Addressing these factors may help improve the quality and impact of future interventions.

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## KEYWORDS

Chronic low back pain; supported employment interventions; Individualised Placement and Support (IPS); health policy; nominal group technique

## ► IMPLICATIONS FOR REHABILITATION

- Interaction pathways between health, employment, and social systems need to be improved to effectively deliver intervention components that necessarily span these systems.
- Research-policy communication needs to be improved by researchers and policy makers, so that research outputs can be consumed by policy makers, and so that researchers recognise the gaps in knowledge needed to underpin policy.
- Improvements in research-policy communication and coordination would facilitate the delivery of research output at a time when it is likely to make the most impact on policy-making.
- Discussion and clarification surrounding funding mechanisms for research and interventions may facilitate innovation generally.

## Introduction

Improving work participation within sick and disabled populations can improve health outcomes, reduce poverty, and improve quality of life and well-being [1]. Supported employment services comprise interventions that aim to place individuals in jobs, without extended preparation, and with individualised support to help maintain participation [2]. One

specific type of supported employment intervention, known as Individual Placement and Support (IPS), is a well-specified intervention involving close integration of occupational and health services to support people to gain and retain employment while they receive the treatment and support that they need after placement (i.e., the so-called “place then train” approach) [2,3]. IPS has been shown, in a 2016 systematic review of 17 studies,

and a 2019 review of 27 studies, to be more than twice as likely to lead to competitive employment than traditional vocational rehabilitation in people with severe mental health difficulties [4,5].

Low back pain (LBP) is an extremely common symptom that is experienced by people of all ages [6]. In the USA, LBP accounts for more lost workdays than any other condition [6]. In the UK, it was reported to account for around 10 million work days lost among those aged 25–64 years old, in 2014 [7]. Musculoskeletal conditions (of which LBP is the most common) accounted for one-third of work days lost in Norway in 2017, and in the UK, two-million disabled people with musculoskeletal conditions are not in employment; an unemployment rate for disabled people with musculoskeletal conditions of 54% [8,9]. While the symptom of LBP is common and accounts for many lost workdays, Chronic LBP (i.e., LBP that is present for longer than three months) can have a more diverse impact, and in the 2015 Global Burden of Disease Study, was ranked number one in terms of Years Lived with Disability (YLDs) [10,11]. For many people, work is an essential part of their self-identity and an important activity to maintain despite chronic LBP [1].

Mental health difficulties are frequently comorbid with chronic LBP; either as a pre-existing condition, or sequelae to the psychosocial and physical challenges associated with living with chronic LBP [12–14]. It is plausible, therefore, that supported employment approaches might be effective in improving work participation in this population. Furthermore, there is some trial evidence that integrated clinical and occupational interventions are effective at reducing days lost from work in LBP populations [15]. Work participation during and following supported employment interventions may help people with chronic LBP to overcome obstacles to gaining and retaining employment, facilitate the restoration of self-identity, as well as improving socio-economic status, and preventing social withdrawal [11,16].

There may be challenges and opportunities in adapting supported employment interventions for people with chronic LBP, who may, for example, require specific work-place accommodations to facilitate work and allow them to consistently meet the requirements of their role [16–19]. We aimed to identify what an expert panel believed to be the most prominent opportunities and challenges associated with adapting supported employment interventions to help people with chronic LBP gain and retain employment.

## Methods

Nominal group technique (NGT) is a highly structured method of achieving consensus in a face-to-face setting. The method has previously been used to establish priorities for research and services in areas such as critical care, stakeholder priorities for support services, and priorities for a national breast cancer centre [20–22].

We invited delegates who attended the International Back and Neck Pain Research Forum 2017, in Oslo, Norway, to self-select to join a workshop session as part of an expert panel.

The first 15 min were used to present three 5-min primer presentations on (1) development of a supported work-placement intervention; (2) IPS interventions and their fidelity; and (3) the ongoing Oslo-IPS in pain trial (NCT02697656) [23]. Panellists were then asked to consider the question “*What are the most important opportunities and challenges in adapting supported employment interventions for people with chronic low back pain?*”

We followed the four main stages of NGT: silent generation of items for consideration, a so-called “round robin” (i.e., where each participant takes a turn) feedback of generated items, clarification, and finally panel voting (ranking) [24]. We adopted a modification to NGT timings, similar to that suggested by Varga-Atkins, to facilitate fitting the process into our workshop window – an allotted time of 90 min [25]. This pragmatic approach was intended to capitalise on the sesquiannual gathering at this conference of experienced researchers and clinicians with relevant interests.

In the silent generation phase, panellists were given 10 min to consider the research question, without discussion. In the “round robin” phase, each panellist, in turn, fed back one of the items they generated to the facilitator, who wrote these on a flip-board, without discussion. Twenty minutes were allowed for this stage. Discussion occurred in the clarification phase (20 min), where panellists were invited to clarify specifics and to consider whether any of the items could be grouped together or removed. Once the panellists were happy with the refined set of clarified items, they ranked each item for perceived importance using a provided sheet, where higher rankings indicated greater perceived importance. For example, if 12 items were shortlisted following the clarification phase, then each panellist would order these from most important to least important, by awarding 12 down to one point for each item, without replacement. Ten minutes were allotted for the ranking stage. Ranks were summed and reported back to the panel. To facilitate this, we designed a spreadsheet that would sum ranks and graph the relative importance as soon as ranks were input after collection. The results were reported back and ratification of the results was collectively sought from the panellists. Ten minutes were allowed for this final stage. All participants received oral and written information about the study and gave written consent to be acknowledged in the study report.

## Results

Nine experts attended our workshop and completed the process (Table 1). Of these nine, three identified as British, three as Norwegian, one as American/Canadian, one as Dutch, and one did not provide a nationality. The panel members’ ages ranged from 31 to 60 with a mean age of 42.5. Years of experience ranged from 1 to 30 with a mean of 16.8 years. The gender

Table 1. Characteristics of NGT participants.

Participant	Discipline/background	Age	Gender	Experience <sup>a</sup> (years)	Nationality
1	Research and health psychology	31	Female	6	Norwegian
2	Policy research (work and health)	46	Female	20	British
3	Physiotherapy	46	Female	21	British
4	Nursing, epidemiology, and trials	40	Female	13	British
5	Research, physical medicine, and rehabilitation	ND	Male	25	ND
6	Research, physical medicine, and rehabilitation	34	Female	10	Norwegian
7	Rehabilitation medicine	52	Male	25	Dutch
8	Research and osteopathy	31	Male	1	Norwegian
9	Research and physiotherapy	60	Female	30	American/Canadian

<sup>a</sup>Experience in their stated discipline/background.

**Table 2.** Table of items following the clarification and discussion stage and their subsequent ranking.

Item description	NGT rank <sup>a</sup>
Policy and legislation	1
Operational integration across different systems	2
Funding the intervention	3
Attitudes and beliefs about work and health	4
Employer/workplace flexibility	5
Shortage of "good" work/jobs for this client group	6
Dissonance between client/patient and system aims	7
Timing of the intervention	8
Intervention development	9
The spectrum of issues faced by people out of work with chronic pain	10
Cost effectiveness	11
Research methods and recruitment	12

<sup>a</sup>lower NGT rank numbers here indicate greater perceived importance.

balance ratio was six females to three males, and panellists identified as coming from across research, clinical, and policy backgrounds.

Forty-eight items were generated during the silent generation and reported in the round robin phase. Following the discussion and clarification phase, these were condensed into 12 unique and refined items (Table 2).

### **Clarification and discussion by item**

The following specific opportunities and/or challenges were identified and discussed in relation to each item. We note that in some of the responses panellists referred to chronic pain more generally, and while the focus was on chronic LBP, the panel thought that many of the issues identified may also be applicable to a wider musculoskeletal pain population.

#### **1. Policy and legislation**

The highest-ranked item (Table 1) comprised three panel contributions that were grouped under this category. The contributions concerned challenges to legislation relating to the disclosure of health issues to an employer, translating research evidence into policy, and ensuring retention of fidelity once an intervention is scaled-up or integrated into policy. However, influencing policy was also seen as an opportunity.

#### **2. Operational integration across different systems**

This item comprised 17 grouped contributions from the panel. The item concerned the integration of health, employment, and social (benefits) systems. Several opportunities were identified. The panel's view was that there were many people in linked roles with an interest in supporting chronic LBP patients into work, and so there is likely to be a range of potential case managers (e.g., occupational health nurses, occupational therapists, physiotherapists, psychologists, etc.). It was asserted that many clinicians in pain clinics want to support patients in valued activities and that work may be among these. However, it was suggested by another member that there may be a lack of work focus on the interventions patients with chronic pain receive in pain clinics. Opportunities for academic study in the application of the "one plan" principle (i.e., integrating patient, work/healthcare, employer, partner, and occupational health) and the place and train principle, were noted. It was proposed that through increased involvement of the workplace and supported employment managers, it may be possible to better develop interventions in terms of defining what is necessary to gain and retain competitive employment. It was suggested that opportunities may exist in increasing training and education of all health

professionals to ensure that they ask their patients about work, and identifying training needs, and developing new approaches. The challenges identified under this heading comprised changing the nature of systems, which panellists suggested may be siloed (insular/unlinked); engaging with employers and identifying any modified work processes that may be necessary; providing suitable support to gain and retain at the right times; and gaining the support of supervisors and the work group of the affected individual to make appropriate work adaptations. Finally, the group was aware of no clear joined-up pathways that bridge the primary and secondary health care and work arenas (e.g., vocational rehabilitation services), and it was suggested that the case manager would either need to be that bridge, or to build a bridge. To facilitate this, it was thought that support from others and key systems would be needed.

#### **3. Funding the intervention**

Four grouped contributions from the panel were condensed at the clarification stage to form this item relating to who funds and who benefits from the intervention. This issue was viewed as both a challenge and an opportunity. It was viewed as an opportunity insofar as there was scope to consider new approaches to funding these types of interventions, and a challenge in that the alignment of financial incentives for both the participant and the employer/funder needed consideration. The perceived challenge related to which authorities might feel responsible for funding; in terms of whether funding for such an intervention would fall under government departments, healthcare funders, insurers, employers, etc.

#### **4. Attitudes and beliefs about work and health**

This item comprised four grouped contributions from the panel. These were concerned with common myths about clinical interventions for chronic LBP having to come before work/vocational rehabilitation efforts, and in particular that to have an "effective" work-life a person must be 100% fit (i.e., in this case, pain free). Challenges were noted in terms of changing stakeholders' beliefs about work and pain, where stakeholders comprise patients (including family members and carers), employers, employees, healthcare, and government. It was also suggested that increasing public understanding of the benefits of work for health may be challenging and that social and cultural changes may be necessary for this change to be fully realised.

#### **5. Employer/workplace flexibility**

There were three grouped contributions from the panel relating to this item. Finding employers willing to employ people with chronic musculoskeletal pain generally was viewed as a challenge. Nevertheless, the growing evidence base of the effectiveness of workplace interventions was viewed as an opportunity, in that it might motivate increased participation of stakeholders.

#### **6. A shortage of "good" work/jobs for this client group**

This item comprised two grouped contributions from the panel that were concerned with quantifying and understanding the availability (challenge) and influence (opportunity) of "good" work (i.e., rather than just any work). It was noted that at times when a nation's economy is challenged there may be knock-on effects for the availability of good/desirable jobs, especially for those in chronic LBP who are out of work. It was suggested that some of those with chronic LBP who have fallen out of work, may have characteristics of low socioeconomic status, low education, low skills, and low return to work self-efficacy.

### 7. Dissonance between client/patient and system aims

This item comprised three grouped contributions that were identified as challenges. The panel was concerned with how an intervention might get all relevant stakeholders on board (general practitioners, employers, etc.), whether the care was client-driven or society-driven (for example, whether gaining/regaining work was a goal of the patient or society) and how to involve people close to the participant in the intervention.

### 8. Timing of the intervention

One contribution from the panel noted that for any given work-focused intervention, in the context of chronic LBP, there might be questions surrounding the timing of the intervention with respect to the natural history of the pain, its relationship with work, and that there is a challenge in identifying the importance and effect of timing.

### 9. Intervention development

Three opportunities for intervention development were suggested and grouped together. It was asserted that healthcare alone is not getting this population back into work (even if it meets some health goals/outcomes) and that there may be opportunities in transferring evidence-based interventions from severe mental illness to this population, and in incorporating exposure *in vivo* approaches in interventions.

### 10. The spectrum of issues faced by people out of work with chronic pain

This item comprised three grouped contributions from the panel. It was noted that those who have fallen out of work and have no job may be particularly hard to help. There was a suggestion that in order to be pragmatic, we may need to broaden the target population for future trials. However, there was also some sentiment that generally in work-focused interventions, populations are already broad. Additionally, a challenge was noted with respect to it being methodologically desirable to reduce heterogeneity and thus the criteria for entry into a study may need to

consider a balance of these considerations. Apart from the variance between people, it was also suggested that within-person variation may be important to understand in the context of transitions in employment as a function of the natural history of chronic LBP (as intervention opportunities may vary at different stages of experience of chronic LBP – some overlap here with Item 8 is noted).

### 11. Cost-effectiveness

One contribution noted that there is both challenge and opportunity in identifying the cost-effectiveness of supported employment interventions.

### 12. Research methods and recruitment

There were four grouped contributions from the panel under this heading. These were broadly concerned with research methodology. Concerns comprised the willingness of people to participate in supported employment interventions, accessing register data, and the notion that pain is multifactorial, and accepting this, it was questioned whether primary health outcomes should only include the gaining/regaining of employment, or also other domains. It was further suggested that gaining/regaining employment is also multifactorial, which makes it challenging to accurately study what works, when, and for whom.

Figure 1 shows how the panel collectively ranked identified and categorised items. As the panel ranked there were 12 items ( $i$ ), and nine panel members ( $k$ ), we note that the sum of the total NGT ranking scores is  $\sum_{i=1}^n \cdot k = 702$ . Each of the 12 items clarified gained between 31% and 81% of the maximum possible score for a single item.

## Discussion

### Main challenges and opportunities identified

The challenges and opportunities identified and judged most important related to policy and legislation; ensuring operational

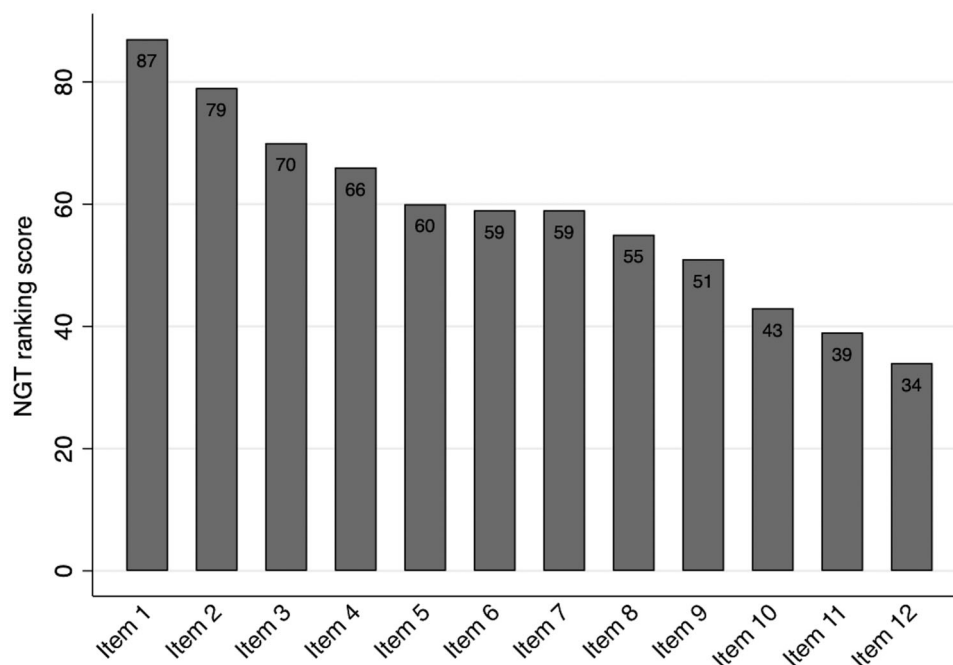


Figure 1. Bar chart showing item ranking. A higher NGT ranking score indicates greater perceived item importance, and here lower ranks indicate greater importance. Table 2 provides an item legend.



integration across different systems; funding interventions; and managing attitudes towards work and health. Five areas were then ranked more centrally in the distribution of rated importance; these comprised ensuring employer/workplace flexibility; a perceived shortage of good work for the client group; the potential for dissonance between client/patient and system aims; the timing of the intervention; and the development of the intervention more generally. Finally, three items were identified and ranked as being relatively less important; these comprised the spectrum of people; cost-effectiveness; and research challenges.

### **Implications**

Although matters of policy and legislation were rated most important by the panel, accepting that these should be evidence-based, forming policy and legislation is necessarily dependent upon empirical work. The design of this work may be dependent on some other items rated as relatively less important by our panel. Thus, this set of identified challenges and opportunities may describe something of a hermeneutic circle given the existence of inter-item dependencies.

An overview of the issues at the intersection of researcher and policy maker interests might be summarised as whether we can (1) trial interventions that act in existing health and work systems—which is dependent on there being sufficient infrastructure to permit the necessary interactions and communications between existing systems; while (2) ensuring that research outputs are readily consumable for policy makers; and (3) that research and policy making can be coordinated in such a way that the information yielded from research can be used by policy makers at the right times. The implications are that integration and communication between different systems, from which intervention components will arise, needs improvement, as does the communication between academics and policy makers regarding research outputs and ensuring these are made useful for informing policy needs.

### **Comparisons to existing research and policy, and future recommendations**

Cullen et al. systematically reviewed studies of workplace-based return to work interventions, and reported finding strong evidence that multiple-domain interventions (i.e., interventions that spanned at least two of three intervention domains comprising health-focused interventions; service coordination interventions; and/or work modification interventions) improve outcomes in workers with musculoskeletal and mental health difficulties [26]. There is thus some evidence that developing interventions featuring components that span health and work systems is both already possible and useful.

In 2016, the UK Joint Work and Health Unit published a consultation document (Green Paper) on work, health, and disability which outlined policy thinking and the need for change by employers, the welfare system, health and care providers, and the general public [9]. The UK government's response was published in 2017 and contained details of a 10-year strategy emphasising the importance of joining up welfare, employment, and health-care systems [27]. The strategy prioritises addressing mental health and musculoskeletal conditions, as the most common conditions that affect work participation and making significant research funding available to support the objective. It is noted that stakeholders will be encouraged to disseminate knowledge to policy makers. Additionally, desires to encourage changes in

culture and mind-set across society (including employers, health services, and individuals themselves) were detailed, as was the desire to better utilise technology to remove barriers (*sic*) to work and to facilitate interaction between people and health and welfare services. The NHS's 2019 10-year plan references the government's framework for voluntary reporting on disability, mental health, and wellbeing in the workplace [28,29].

Similarly, the European Agency for Safety and Health at Work has emphasised needs for building cross-disciplinary bridges and for focusing on higher-quality intervention studies that apply a multi-risk approach in order to promote evidence-based practice in the prevention of musculoskeletal disorders [30]. The Societal Impact on Pain platform, operated under the auspices of the European Pain Federation (EFIC), has called, as part of an advocacy plan, for the establishment of an EU platform for the exchange of best practices between member states on pain and its management and impact on society. Using the platform to monitor trends in pain management, services, and outcomes to "provide guidelines to harmonize effective levels of pain management to improve the quality of life of European Citizens" has been recommended [31]. Against this, Societal Impact on Pain has reported that, as of 2014, eight countries (seven in continental Europe) had completed the launch of a national pain action plan.

Several of the proposed areas of focus across these policy documents and calls match with our panel's rated nominations. Governments may already be recognising that changes to policy, framework, and legislation, and that improvement in communication are needed. It has been suggested that in low and middle-income countries, where the burden of LBP is increasing, that a particular concern is that as most employment is informal, possibilities for job modification may be completely absent [6]. However, Lebanon is among the eight countries Societal Impact on Pain reports has already completed national pain action plans. Such steps may go some way towards helping to highlight the benefits of job modifications in low and middle-income countries.

We are aware of several calls for work and health research for people with chronic pain (most of which is chronic LBP) from Norwegian and UK funders. However, funding has previously been noted as an obstacle in providing IPS services in the US for people with mental health difficulties [32]. Qualitative approaches and cross-sectional studies may be useful for exploring the willingness of funders and government departments to funding supported employment interventions and possible funding mechanisms.

Several of the other challenges and opportunities identified by our panel may be able to begin to be addressed relatively straight-forwardly with research. For example, researcher and policy makers' views could be explored with regards to how policy and evidence from the academic sector might be better reported and integrated. What is valued by people who are off-work or have fallen out of the workforce with chronic LBP and what these people feel they need to gain or regain employment, might be explored not only with qualitative approaches, but also with discrete choice experiments, where people's perceived unmet needs and value attributes relating to intervention characteristics could be quantified and used to inform intervention development [33]. Qualitative work and discrete choice experiments might also be of more direct use to policy makers for exploring what incentives business would need to employ or provide paid work placements to people with chronic LBP who would like to gain/regain employment. Using outputs of these studies to inform development of interventions that are more attractive to a target population may then help to improve recruitment. Trials of these

interventions could explore/model timing of the delivery of the intervention as an objective/factor. Finally, ongoing analysis of routine data from active programmes may help to identify what characteristics are associated with the gaining/regaining of employment, by intervention, and help to categorise what works, when, and for whom, amongst a broad spectrum of people. To this end, some work on determining and standardising what work outcomes should be included in routine datasets may also be needed.

### Strengths and limitations

Like Delphi technique, NGT is an approach that is often used for achieving panel consensus when empirical evidence on a topic is either impractical or impossible to obtain [34]. It is important to note that such approaches must not be interpreted as a correct answer [35]. Empirical approaches that more accurately estimate important parameters using inference may be possible. We fitted a modified approach into a relatively typical conference workshop structure to make good use of having subject experts in one place and we note the limitations of the approach accordingly.

It may be necessary to distinguish between implications and corollaries of “expert panel” size and “sample” size. In statistical inference, there is a proportional relationship between sample size and the accuracy of parameter estimates that follow from measuring quantities in the sample which, through inference, are used as proxies of unknown parameters in the population from which the sample was drawn. Inference is not operated in this way when using an expert panel. As noted by the RAND Corporation when developing consensus methods, the idea of pooling expert views is a near tautology [36]. However, in experiments with expert panel sizes ranging from 7 to 30, RAND found in practice that  $n$  experts performed better than one, for estimating quantities that in normal circumstances would be empirically inestimable, or when the information was not readily available [36,37]. When the approaches were applied to health, early consensus studies on surgical techniques often used panel sizes of nine experts, on the basis that nine is “large enough to permit diversity of representation while still being small enough to allow everyone to be involved in group discussion” [38]. In recent years, the size of expert panels has increased quite dramatically (most notably in on-line Delphi studies in health research). One driving force of this may be the ease with which on-line studies can now be conducted; however, another may be belief that the propagated view that sample sizes need to be large (which is correct, of course, in matters of inference) should carry to an expert panel. This does not necessarily follow since inference is not operated in an expert panel (experts are not sampled from, and nor are they representative of, the relevant population of interest). As well as information there could also be misinformation in  $n$  experts’ heads which aggregates to form a less reliable opinion than might be obtained from a single expert alone [36]. Thus, the appropriateness of panel composition may be better qualified in terms of its “expertness” rather than size.

With the above considerations in mind, we may have lacked expert input from the perspectives of patients with chronic LBP, employers, and potential funders of research and interventions. The issue of who is considered an expert deserves consideration. Definitions of experts vary widely [39]. The suggested definition of Fink et al., that an expert is defined as “...representative of their professional group with sufficient expertise not to be disputed or the power required to instigate the findings” [40]. We suggest this has definition has good face validity; however, our self-

selected expert panel made up from participants from the International Back and Neck Pain Research Forum 2017, may be only partially consistent with the definition. While our panel has good academic standing, and an average of 16.8 years’ experience ( $SD = 9.8$ ), on the whole, it may have more power to instigate findings relating to research than policy matters. One must also consider the possibility that experts who attend the same conference may be anthropologically similar in their views. Thus, there may be extant views of non-present experts that are valid and differ but were not captured. Accordingly, we emphasise that a “true” answer is not being claimed to have been found, but that the panel’s views might be informative in the absence of empirical evidence.

Some components of the categories identified might be in need of clarification, or further consideration or investigation through research. For example, in Item 6, a perceived shortage of “good” work/jobs is referenced. However, it may not be clear what constitutes a “good” job and this may be subjective and dependent upon the job being desirable or agreeable to a given individual.

As we anticipated, careful time management was essential to achieving our study aims in limited workshop time. Some of the panel commented that while the session was intensive, they were pleased with the outcome and thought that the output of the session would be useful to others.

Finally, we note that our question focused on the adaptation of supported employment interventions and their use in helping people with chronic LBP to gain/regain and retain employment. We would note caution in interpreting results in relation to populations of sick-listed people (i.e., where people have a job to which they may return) as these priorities may not be appropriate to interventions intended solely for sick-listed populations. We also emphasise that in some of the responses panellists referred to chronic pain more generally and while the focus was on chronic LBP, many of the issues identified might reasonably be transferable to a wider musculoskeletal pain population.

### Conclusion

Twelve categories of opportunities and challenges associated with adapting supported employment interventions for people with chronic LBP were identified. These were ranked in order of importance: 1. Policy and legislation matters; 2. Operational integration across different systems; 3. Funding the intervention; 4. Attitudes and beliefs about work and health; 5. Employer/workplace flexibility; 6. A shortage of “good” work/jobs for this client group; 7. Dissonance between client/patient and system aims; 8. Timing of the intervention; 9. Intervention development; 10. The spectrum of issues faced by people who are out of work with chronic pain; 11. Cost effectiveness; and 12. Research methods and recruitment. Researchers and policy makers working on adapting supported employment interventions for use with people with chronic LBP might consider these items; in particular, those rated most important, where concerns span the issues of improving integration/communication between different systems that would provide intervention components, improving communication of research outputs for policy needs, and encouraging discussions about potential funding mechanisms.

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### Author contributions

The study was conceived by RF, designed by RF, MU, KB, TP, and VS, administered by RF, MU, VS, TP, and PA. RF did the analysis and wrote the first draft of the paper. All authors contributed comments and edits to successive drafts.

### Disclosure statement

RF and MU are part of an academic partnership with Serco Ltd related to return-to-work initiatives, and shareholders and directors of Clinivo Ltd that provides electronic data collection for health services research. MU was Chair of the NICE accreditation advisory committee until March 2017 for which he received a fee. He is a chief investigator or co-investigator on multiple previous and current research grants, on low back pain and other disorders, from the UK National Institute for Health Research (NIHR), Arthritis Research UK and is a co-investigator on grants funded by the Australian NHMRC. He is an NIHR Senior Investigator. He has received travel expenses for speaking at conferences from the professional organisations hosting the conferences. He is a co-investigator on a study receiving support in kind from Orthospace Ltd. He is an editor of the NIHR journal series, and a member of the NIHR Journal Editors Group, for which he receives a fee. He has published multiple papers on chronic pain some of which are referenced in this paper. MFR is a steering group member of the EFIC Societal Impact of Pain Steering Group and co-chair of the Pain Alliance Netherlands. KB occasionally receives consultancy fees from occupational health providers, and is an expert advisor to the UK Department for Work and Pensions. NEF is a chief investigator or co-investigator on multiple previous and current research grants, on low back pain and other disorders, from the UK NIHR, Versus Arthritis, and other funders. She is an NIHR Senior Investigator. She has received travel expenses for speaking at conferences from the professional organisations hosting the conferences and has received research funding to develop, test and implement interventions that support people with musculoskeletal pain in staying at, and returning to, work. PA, TP, TLJ, VS, SB, MCB and GJ declare that they have no conflicts of interest.

The views and opinions expressed by authors in this publication are those of the authors and do not necessarily reflect those of the NHS, the NIHR, MRC, CCF, NETSCC, the Health Technology Assessment programme or the Department of Health and Social Care.

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### Data availability statement

The data that support the findings of this study are available from the corresponding author, RF upon reasonable request.

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