Factors influencing return to work after hip and knee replacement

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Background

Return to employment is one of the key goals of joint replacement surgery in the working-age population. There is limited quantitative and qualitative research focusing on return to work after hip and knee replacement. It remains unclear why certain groups of patients are not able to achieve sufficient functional improvement to allow productive return to work while others can. Very little is known about the individual patient and employer perspectives in this regard.

Aims

To review current evidence for the factors influencing employment outcomes in patients undergoing hip and knee replacement.

Methods

Original articles and reviews in Medline, Embase and PsycINFO from 1987 to 2013 were included in the analysis.

Results

Age, patient motivation, employment before surgery and type of job were found to be important factors in determining return to work following hip and knee replacement.

Conclusions

There is a need for further qualitative work on how and why these factors influence employment outcomes.

Keywords

Arthritis; joint replacement; occupational rehabilitation; qualitative.

Introduction

Hip and knee arthritis causes significant problems in the working-age population and can lead to a reduced quality of life, change in employment or unemployment [1,2]. The 10th National Joint Registry reported that 18–20% of patients undergoing hip and knee replacement in England and Wales were under the age of 60 years [3]. Joint replacement may enable patients to continue working, which may be more cost-effective in the long term [4] as patients remain economically productive members of the society.

Heavy lifting and bending have been reported as important factors in the development and progression of arthritis [5–9]. The effect of arthritis on employment depends on the type of work usually performed, with manual or lifting jobs associated with increased levels of unemployment due to arthritis [2,10–15]. In addition to a loss of employment, arthritis has also been associated with a prolonged sickness absence or a change in the type of work performed [1,12]. In patients with rheumatoid arthritis, the common factors that influence work disability include employment factors (nature of job, physical activity, degree of autonomy at work, work environment and transport to work), employee factors (age of onset of disease, education, motivation and marital status), disease factors (time since onset, level of disability and flare ups) and other factors, such as time taken for health care, in-patient care and/or rehabilitation [16].

Previous studies have quantitatively assessed the role of surgery in returning the patient to work after joint replacement [17–20]. In a systematic review, Kuijer et al. [21] concluded that the literature was sparse regarding factors affecting return to work after knee or hip replacement. While quantitative studies can identify the extent to which surgery helps in
return to work, these methodologies do not examine the perspectives of patient or employer which would be better determined by qualitative studies. Qualitative research aims to develop theory on individual decision making or behaviour by gathering in-depth interview data prioritizing the views of a small number of patients or groups. In addition, qualitative approaches can develop understanding of the experience of arthritis and its treatment and highlight the particular significance it may have for different categories of patient at different stages of treatment. Since there is an emergent body of qualitative literature on arthritis and joint replacement, this article aimed to review this literature to establish whether and how qualitative research has informed findings from the quantitative literature on joint replacement and return to work among those of working age.

This review of qualitative and quantitative literature aimed to address the following questions:

1. What are the employed patient’s expectations from a joint replacement before and after surgery?
2. Who is most at risk of not returning to work after joint replacement surgery?
3. What external factors are important to help patients return to work?
4. Does age of the patient determine their ability/motivation to return to work?
5. Are patients able to return to work at the same level?

Methods

A systematic literature review was conducted of the databases Medline, Embase and PsycINFO for peer reviewed articles on humans using the search terms ‘qualitative’ and each of ‘joint replacement’ (66 citations returned), ‘knee replacement’ (90 citations returned) and ‘hip replacement’ (68 citations returned), limited to papers from 1987 to 2013. Papers were excluded if they concerned: operations other than hip or knee replacement, living with osteoarthritis (OA) without consideration of total joint replacement (TJR), experience in primary care only or questionnaire development. Study protocols for randomized controlled trials, quantitative or biological studies using the word ‘qualitative’ were excluded. A total of 47 articles were identified, of which 3 were review articles. A second literature search was carried out for quantitative research using keywords ‘employ$’ or ‘work’ AND each of ‘joint replacement’, ‘knee replacement’ and ‘hip replacement’, limited to papers from 1987 to 2013. Further papers from reference lists of the remaining articles were also followed up. We graded the strength of evidence for each final statement using the Royal College of General Practitioners (RCGP) three-star system (1995) (Table 1).

### Table 1. Royal College of General Practitioners (RCGP) three-star system (1995)

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<th><strong>Category</strong></th>
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<td>Generally consistent finding in a majority of multiple acceptable studies.</td>
<td>***</td>
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<tr>
<td>Either based on a single acceptable study or a weak or inconsistent finding in some of multiple acceptable studies.</td>
<td>**</td>
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<tr>
<td>Limited scientific evidence, which does not meet all the criteria of acceptable studies.</td>
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### Results

#### Summary of qualitative literature

**Expectations and patient decision processes prior to hip and knee replacement**

There is an emerging body of qualitative studies of OA patients’ experiences and views on TJR prior to surgery, in particular considering how these may impact on the decision whether or not to undergo surgery [22] (Table 2). A meta-synthesis of qualitative research exploring reasons for unmet need for total knee replacement (TKR) [30] identified 10 studies, including 4 from the UK [26,31–39]; the majority included the views of patients awaiting either hip or knee replacement. Most studies conducted in-depth or semi-structured interviews with samples of 17–27, though Figaro et al. [39] had a sample of 94. Various analytic approaches were adopted: thematic, grounded theory, framework, phenomenological or content. Participants’ ages typically ranged from early 50s to early 80s, although Woolhead et al. [36] included participants as young as 40. Where mean ages of participants were given, these ranged from 64 to 76, suggesting that those of working age were not broadly represented in this research.

These studies highlight the complexity of the decision-making process for patients, with socio-cultural categories of ageing and the role of the health care professional being central to forming patient’s expectations around surgery [32,33,35,40]. A fluid risk/benefit threshold [31] and culturally specific factors [39] are likely to argue against deciding upon surgery. The meta-synthesis concluded that coping strategies and life context were likely to be influential on outcomes of the operation [30]; one study found that the indeterminacy, pain and disability experienced while on waiting lists resulted in a sense of disenfranchisement and a sense of lack of presence in one’s own life. These factors also boost hopes among patients for the potential of the joint replacement operation to transform their situation. In this context, Woolhead et al. [36,41] found that waiting patients’ expectations for the impact of surgery were not clearly formed. They could express ideal or pragmatic hopes but indicated that they did not understand procedures clearly enough to say whether they expected a particular outcome. This literature was also reviewed...
Table 2. Answers to key questions

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<th>Question</th>
<th>Response</th>
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<tr>
<td>What are the patient’s expectations from a joint replacement?</td>
<td>Barriers to employment are important factors driving patients to proceed with joint replacement surgery [23,24] (<em><strong>) Patients have high expectations of the impact of joint replacement surgery on their ability to work [23,24] (</strong></em>) Unrealistic expectations lead to heightened frustration and slower rate of recovery preventing them from returning to work.</td>
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<td>Who is at most risk of not returning to work after joint replacement surgery?</td>
<td>Patients who are unemployed before surgery are less likely to obtain gainful employment after surgery [17,19] and patients who have been off-sick longer pre-operatively are less likely to return to work [25] (<em><strong>) Motivation is the key factor in early return to work [20] (</strong></em>)</td>
</tr>
<tr>
<td>What external factors are important to help patients return to work?</td>
<td>Supportive care from health care providers and family support after surgery are helpful in facilitating successful rehabilitation and satisfaction [26] (<em><strong>) Patients on benefits are less likely to return to work [20,27] while those who are self-employed return to work sooner [19] (</strong></em>) Patients who have no restriction on activity following joint replacement surgery return to work sooner [21,28] (***)</td>
</tr>
<tr>
<td>Do age and co-morbidities of the patient determine their ability/motivation to return to work?</td>
<td>Younger patients and those with less co-morbidities are more likely to return to work [27] (***)</td>
</tr>
<tr>
<td>Are patients able to return to work at the same level?</td>
<td>The majority of patients are able to return to work at the same level [29], although patients involved in heavy manual labour return to work slower [20], while those with light work load returned sooner [25] (***)</td>
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* to ***, RCGP three-star grading of evidence; see Table 1.

in 2009 [42] to illustrate the potential of qualitative approaches.

Since O’Neill et al.’s meta-synthesis, a number of studies have explored this area further with broadly similar theoretical approaches and samples [43–47]. For instance, one Swedish study interviewing 10 patients (mean age 65) awaiting hip replacement found their outlook characterized by endurance or resignation in the face of impaired mobility and great pain in their daily routine [48]. Some studies have employed focus group interviews rather than individual interviews [49–51]. Patient interviews have also been complemented with clinician interviews and observations [52,53]. Findings, however, are in general consistent with the earlier studies, with perhaps more consideration of, or emphasis on, the specific education needs of patients awaiting or considering TJR. Two studies [23,24] noted that some patients interviewed individually or in focus groups identified barriers to employment (difficulty walking to sites and with sitting or standing in offices for long periods) as part of the ‘final straw’ prompting their choice to undergo total hip replacement (THR). Heaton et al. [24] note that in making this choice, patients may have developed heightened expectations of the likely impact of THR on their ability to work. In general, however, this literature offers no specific comment on working lives of individuals awaiting joint replacement.

Expectations before compared with experience after hip and knee replacement

There have been fewer qualitative investigations of patient perspectives following TJR. Although O’Neill et al.’s meta-synthesis focused on the pre-operative decision process, three of the included studies also gathered data on patients’ views in the wake of surgery. One study reported on a focus group of five patients who had received hip or knee arthroplasty [34]. The authors identified difficulties applying learned skills and coping with pain in the post-operative period and concluded that better education before surgery on best and worst outcomes could reduce distress arising from a mismatch between patient expectations and experience. A grounded theory study from New Zealand of nine patients interviewed about pre- and post-operative experience recommended support to help patients maintain their optimism throughout the perioperative period [26]. Woolhead et al. [37] also followed up post-operatively 10 of the patients they had interviewed prior to TJR surgery [36]. They found that those patients moved in their interviews from an initial assertion that their operation had left them with few symptoms or none, to stating that they still suffered pain and disability. It was found that they struggled to make sense of their experience and outcomes, some blaming themselves for pain or disability for instance because they had been ‘overdoing it’. These findings were also summarized by Dieppe et al. [54].

A meta-synthesis of 16 studies of older patients being discharged from hospital following either hip or knee replacement identified common constructs across studies of loss of independence, functional and activity limitations and coping with pain, all of which bore a crucial relationship to mental outlook [55]. Content analysis of short interviews with 30 UK inpatients in the 6 weeks following a knee replacement operation identified concerns at this stage with a wide range of aspects of life [56]. In France, a substantial qualitative dataset, covering all stages of OA and treatments, was gathered through interviews with 81 primary care patients with OA and 29 consultants [57]. Patients receiving knee replacement indicated dissatisfaction with outcomes of the surgery and reported they were still suffering more pain than they had expected in follow-up interviews. Patients interviewed in Sweden also emphasized their
experience of overwhelming pain while in hospital following hip replacement [58,59].

However, in a UK study following up hip replacement patients aged 44–83 at 1–2 years, patients said they had learned to emphasize positive outcomes and alleviate the harmful effects of pain and physical limitations by reinterpreting the meaning of their lives allowing them to cope with their post-operative pain and discomfort [60]. In Sweden, Gustafsson et al. [61,62] interviewed joint replacement patients aged 65 or above, longitudinally, in five sequential interviews over the 2 year period from joining the waiting list to cessation of post-operative care. Their analysis highlighted the ‘dream’ of becoming able-bodied and escaping bodily confinement and pain as central to patients throughout the process, but they found that patients’ lack of knowledge about surgical procedure had not prepared them for the transitional changes (rethinking their beliefs and perception regarding their bodies) that were required following their surgery. Other interview and focus group studies in the UK [24,63] and USA [64] also found that unrealistic expectations in patients led to them feeling frustrated, less confident and independent than they had anticipated and less able to participate in activities in the months following surgery. Heaton et al. [24] note that the 9 of their 52 interviewees who described dissatisfaction with their hip replacement after 4 months had suffered complications or problems with their operations and were frustrated that the slow rate of their recovery was preventing them returning to work.

The importance of supportive care from health care professionals throughout the perioperative period in order to facilitate joint replacement patients’ transition was stressed by all authors. Four studies noted that the accounts of their release from hospital suggested paternalistic relationships with, or orientation towards, health care providers [65–68], although studies interviewing patients in Finland and Sweden following hip arthroplasty found strong post-operative satisfaction with health care providers [48,69]. Family support may be crucial to successful rehabilitation following release from hospital [65]. In Canada, the increasing numbers of TJRs performed and the changing profile of those receiving the operations towards younger age groups increased the need for rehabilitation services [70]. A study from New Zealand [26] concluded that prehabilitation (rehabilitation before surgery), post-operative nursing care and discharge planning could help in patients’ optimism and motivation to self-help and patient teaching should reflect realistic recovery process.

**Summary of quantitative research on employment outcome after hip and knee replacement**

Our search did not reveal any qualitative study looking at employment outcome after total hip and knee replacement. Quantitative analyses have, however, been performed (Table 2).

**Who is most at risk of not returning to work after joint replacement surgery?**

Lyall et al. [17], in a study on employment outcome after TKR, showed that 40 out of 41 patients (97%) who were working pre-operatively went back to work within 6 months. Patients were often back at work in 6 weeks and 85% (35) were pleased with the result of the operation. In their study, individuals not working pre-operatively did not resume working post-operatively. The mean period of unemployment in their group before operation was 35 months (range: 21–58 months). Their results [17] showed that 80% of patients in the unemployed group prior to TKR had previously performed manual jobs, involving prolonged periods of standing, lifting and bending down and 20% were performing non-manual jobs. Overall, eight patients (53%) were pleased with the results of the operation. This study indicated that patients working pre-operatively were highly likely to continue working after TKR. However, TKR was unlikely to facilitate return to work for the already unemployed.

Jorn et al. [25] concluded that the patients who were on sick leave for <180 days pre-operatively had a better health profile (Nottingham Health Profile—in terms of emotion, energy, pain, physical mobility, sleep and social isolation) than those who were off for >180 days and were more likely to return to work post-operatively. Mobasher et al. [19] examined the effect of THR on employment status in patients under 60 years of age. They found 49 out of 51 patients returned to work after THR if they had been working pre-operatively, a return-to-work rate of 96%. Half of patients off work pre-operatively returned to work after hip replacement. They concluded if a patient was off work due to hip pain, then THR would facilitate a return to work [19]. However, Mobasher et al. [19] also reported a reduced rate of re-employment in patients who had been unemployed for >1 year before operation. Malek et al. [18] noted that at 10 years after hip resurfacing, 90% of patients were in the same employment after surgery, with no or minimal restriction.

**What external factors are important to help patients return to work?**

Kuijer et al. [21] only found three studies suitable for inclusion in their systematic review. They reported that surgical approach and type of operation may have an influence on return to work; restrictions on patient movements had a negative influence; discharge guidelines had no effect and the percentage of patients returning to work and time to return to work varied. The timing of discharge
from hospital did not influence the number returning to work [71]. This review clearly highlighted the limitations of available literature to draw relevant and meaningful conclusions and the need to perform more robust studies.

Styron et al. [20] explored the pre-operative predictors of returning to work after primary TKR and concluded that although the physical demands of a patient’s job had a moderate influence on the patient’s ability to return to work following a primary total knee arthroplasty, the patient’s characteristics, particularly motivation, played a more important role. They concluded that the median time to return to work after knee replacement was 8.9 weeks, with patients who had a sense of urgency to return to work taking half the time of the other group.

Foote et al. [72] found that the type of procedure could influence employability, with patients undergoing TKR and unicondylar knee replacements having better return to employment compared to those with patello-femoral replacement, while the physical intensity of the work remained the same.

Does age of the patient determine their ability/motivation to return to work?

Bohm et al. [27] in a review of 60 patients who had undergone THR concluded that the patients who returned to work were younger (mean age: 49.9 years versus 60.3 years), less likely to be collecting disability insurance, had better physical function and Oxford-12 hip score, less functional limitation from medical conditions and conversely, poorer job satisfaction before surgery. They did not find any difference in the groups in terms of physical demands at job or workforce flexibility. Patients reported an increase in income, decrease in number of hours per week of work, increased productivity and increased ability to cope with physical demands of the workplace. They concluded that surgery should be undertaken before the patient’s hip dysfunction forced them off work.

Are patients able to return to work at the same level?

Mariconda et al. [29] found that 82% of patients after THR were able to return to the same physical demands after surgery while about 14% had to take a more sedentary role. Styron et al. [20] reported that patients with less pain pre-operatively, more physically demanding job and receiving workman’s compensation (sickness benefit) returned to work slower. Jorn et al. [25] concluded that patients with a light workload pre-operatively returned to work sooner.

Discussion

Patient views and experience leading up to surgery are quite well covered in the literature with relative similarity of findings and conclusions in studies from different countries using varied methods. However, there is scope for considerably more work exploring patients experience after surgery, with only a handful of studies gathering such data. Neither pre- nor post-operative studies have touched to any great extent on joint replacement in middle age. Gignac et al. [73] noted the importance of remaining independent and employed to younger patients with OA, and that the focus in qualitative literature on functional limitations had not been matched by examination of impacts on such wider social roles. Since average age in the samples from studies reviewed above is >62 years, the majority of participants followed up after surgery had retired. As such, this body of work does not substantially consider the particular impact of joint replacement surgery on OA sufferers’ working lives. Although an impact on working life has been noted as an issue for younger OA patients in one focus group study [73], qualitative studies had not looked in detail at how barriers to work were experienced by these patients in day-to-day working life and the patient or the employers’ perspective. Some qualitative research has been performed to look at expectations and outcomes of knee or hip replacement, in terms of patient experience [37,41]. However, we could find no qualitative study that has explored the employment outcome after joint replacement in the young working-age population (<60 years). Qualitative studies have not looked in detail at how barriers to work are experienced by these patients in day-to-day working life and the patient or the employers’ perspective. It has repeatedly been found that, prior to operations, patients in this age group had general and not very clearly formed visions of post-operative outcomes, and therefore no clear expectations for their employment.

One of the limitations of our study is the inability to provide evidence for qualitative work on employment outcome, as there is a lack of studies looking into this aspect of joint replacement. The studies that have been included suffer from an element of selection bias, which would be inherent to this type of work. Qualitative studies would have the scope to identify the barriers that young working-age patients undergoing joint replacement might face at work before and after surgery, which cannot be detected by simple quantitative outcome measures. They would also fulfil arthritis patients’ wishes for richer interaction with researchers in the gathering of data in this area [74]. It would be interesting to know if there are surgically modifiable factors, in terms of implant or procedure choice, which may have implications on this. Indeed there is a possibility that if the patient and employer expectations are tailored to setting realistic goals, the outcome may be different. Clearly, a qualitative study of the younger working-age population has the potential to identify factors that might help achieve these goals.

Table 2 summarizes the answers to the key questions raised in the review. During the consenting
process, patients’ expectations should be explored and addressed as unrealistic expectations may actually lead to poorer recovery. Surgeons need to be aware that patients who have been unable to work before surgery and those who have been on unemployment benefit are unlikely to return to work after their hip or knee replacement. Younger patients with fewer co-morbidities were more likely to return to work. Creating a supportive environment at home and work can help facilitate this. Although the majority of patients can return to the same level, those involved in heavy manual labour will take longer.

Conflicts of interest
None declared.

References
1. Vendittoli PA, Lavigne M, Roy AG, Lusignan D. A prospective randomized clinical trial comparing metal-on-metal total hip arthroplasty and metal-on-metal total hip resurfacing in patients less than 65 years old. *Hip Int* 2006;16(Suppl. 4):73–81.


**OCCUPATIONAL MEDICINE CALENDAR**

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<td>October 15–16</td>
<td>Aware, Beware, Take Care! New Insights in Occupational Health Surveillance</td>
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