

# MAPPING RECOVERY AFTER TOTAL HIP REPLACEMENT SURGERY: HEALTH-RELATED QUALITY OF LIFE AFTER THREE YEARS

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**Key words:** total hip replacement, health-related quality of life, continuity of care, discharge planning, community care

## ABSTRACT

### *Objective:*

To investigate recovery from total hip replacement over a three-year period on the basis of patient perceptions of health-related quality of life, demographic (age, gender, family support) and clinical characteristics (co-morbidities, hospital admissions), use of and satisfaction with health services, unmet health needs and social re-engagement.

### *Design:*

Telephone survey of patients' scores on the the 36 item Short Form health survey (SF 36) at three-years as a basis for comparison with scores 12 weeks after discharge; analysis of survey responses on demographic and clinical variables, health services use and satisfaction, unmet health needs and resumption of pre-operative social activities.

### *Setting:*

One tertiary hospital in South East Queensland, Australia.

### *Participants:*

Sixty-two total hip replacement patients from an original cohort of 95 participants in a study three years previously to investigate these variables at one, two, four, eight and 12 weeks post-discharge.

### *Main outcome measures:*

SF36 scores, survey responses on number and type of co-morbidities, age, family support, type and frequency of health services used, satisfaction

with services, hospital admissions, resumption of social activities.

### *Results:*

No significant differences were found on any SF-36 scores, but General Health had declined. Women's Physical Functioning scores fell below population norms, men's remained above the norms. Physical composite scores showed a decline with age, and the Mental Composite Scores increased with age. The number of co-morbidities had increased over three years, with 58% being admitted to hospital. Half reported unmet health needs, related primarily to non-hip problems. Only general practitioner services were used monthly or more, with satisfaction ratings remaining high for all services used. Participation in social activities was increased from prior to surgery for 42% of participants.

### *Conclusions:*

Recovery after hip replacement surgery is dramatic, especially in alleviation of pain, but for older patients, there is a subsequent decline in general health concomitant with others in this demographic group. Differences in men's and women's patterns of recovery suggests differential planning to provide more realistic expectations for recovery and aftercare.

## INTRODUCTION

The study reported here was designed to follow a cohort of total hip replacement (THR) patients over a three-year period as they made adjustments back into their home and community life. Patient perspectives of

their health-related quality of life (HRQOL) five times (one, two, four, eight and 12 weeks) post-discharge revealed that psychosocial recovery preceded physical recovery, which steadily improved over the three month period (McMurray et al 2002). The current study followed the same cohort of patients to see whether these findings were stable after three years, and to investigate: clinical changes in co-morbidities or admissions to hospital; use of and satisfaction with health services; unmet health needs; and, the extent to which they had re-engaged with their community/social networks. Mapping long term outcomes after THR is important for nurses, patients and carers to ensure that discharge planning and aftercare services are responsive to patient-identified needs throughout the home recovery period.

## LITERATURE REVIEW

From a medical perspective, THR has been identified as one of the most successful and cost-effective surgical interventions (Nilsson et al 2003; Knutsson and Bergbom Engberg 1999; March et al 1999). Nursing studies of THR patients have also addressed cost-effectiveness and quality outcome indicators, primarily focusing on clinical pathways and other strategies for improving short-term patient outcomes and reducing the length of stay (Weaver et al 2003; Wammack and Mavrey 1998).

Because many THR patients are older people they are vulnerable to the same factors that place other older people at risk following hospital discharge, some of which persist beyond the immediate post-discharge period. These include age: (<75); gender (m); cognitive impairment; problems with medication regimes; chronic illness; frailty; severe co-morbidities; economic constraints; and, the difficulties of coping without support at home (Nilsson et al 2003; Bull 2000; Naylor 2000; Armitage and Kavanagh 1995, 1998; Bours et al 1998; Lough 1996). Many of these problems are addressed in discharge planning processes that anticipate the particular needs of the client population as transitions are made from hospital to residential care or home (Richards and Coast 2003; Parker et al 2002; Naylor 2000).

Throughout the past two decades there has been renewed interest in discharge planning and aftercare, as nurses have witnessed faster throughput through the health care system (Parker et al 2002). Patients are now being discharged home 'quicker and sicker', many with unmet needs because of variability in access to community services. A review of international nursing studies of orthopaedic patients by Matt-Hensrud et al (2001) and the Cochrane Review of discharge planning by Parkes and Shepperd (2001) reaffirm the pivotal role of nurses in effective discharge planning that can result in decreasing costs, improving patient outcomes and satisfaction, reducing readmission rates and enhancing continuity of care.

The majority of researchers in this area contend that good discharge planning can help maintain continuity of care by ensuring integrated, accessible health services (Bull 2000; McKenna et al 2000; Naylor 2000, Russell 2000; Armitage and Kavanagh 1998; Balla and Jamieson 1994). Three main areas of focus have been identified as improving continuity of care throughout the recovery period, including interprofessional communication, co-ordination of services and provision of information to patients and their families (Johnson et al 2003; Henderson and Zernike, 2001; McKenna et al 2000; Knutson and Bergbom Engbert 1999).

Sparbel and Anderson's (2000b) review of the continuity of care literature indicates a need for greater conceptual clarification. They argue for further study of the linkages and relationships patients make in their transitions across the health-illness trajectory. This concurs with Naylor's (2000) conclusions from a review of transitional care throughout the 1990's. She suggests the need for refinement in the selection and measurement of outcome variables and for incorporating a risk management approach for those at risk for poor post-discharge outcomes, including readmission to hospital. Her secondary analysis of data found a number of variables to be significant independent predictors of time to first readmission. These included self-health rating, functional status, emergency versus elective admission, and the number of comorbid conditions, previous hospitalisations, and prescribed daily medications (Naylor 2000). Although confined to those having cardiac events, her research reveals some issues applicable to all surgical patients, whose needs emerge from the physiologic domain, predominantly common responses to symptoms such as pain.

Little research has been done on the long term effects of an acute care episode across the care continuum (Sparbel and Anderson 2000a, b; Hughes et al 1999). To some extent, this is related to the difficulties of measuring both clinical outcomes and continuity of care across a wide range of individual circumstances once people return home from hospital. To be meaningful, continuity of care studies should be designed to capture not only measures of efficiency and effectiveness in health services, but the extent to which care is accessible, culturally appropriate and satisfactory to patients in relation to their former health status (McMurray et al 2004; McKenna et al 2000; Armitage and Kavanagh 1998). Measures such as the 36 item Short Form health survey (SF 36) (Ware et al 1993) are widely used to capture patients' perceptions of their health status and, in some cases, these are taken to reflect HRQOL (Rapley 2003; Garratt et al 2002; Anderson et al 1999; Jaarsma and Kasternans, 1997). Previous research with the SF-36 has shown it to be easily understood and readily acceptable to most patient groups, even for telephone administration (McHorney et al 1994; Ware 1993; Watson et al 1996). Measuring other influences on recovery is more elusive, and most researchers gather this

information by open-ended questions that provide complementary qualitative data from which to glean a more balanced understanding of HRQOL.

In an attempt to benchmark HRQOL in a cohort of THR patients, our research used the SF-36 to measure their post-discharge scores at one, two, four, eight and 12 weeks. The findings revealed dramatic changes to mental health scores concomitant with pain relief, accompanied by gradual improvement in physical health scores over three months post-discharge (McMurray et al 2002). This differed from a study conducted by Swedish nurse researchers who found that when HRQOL scores were compared at six weeks and six months, the latter scores showed a decline in HRQOL (Knutsson and Bergbom Engberg 1999). The Swedish study analysed telephone interview data that revealed no significant improvements between the pre-operative period and six weeks postoperatively, with the major psychosocial improvement occurring at six months. Most patients reported that pain alleviation (measured separately) was more important than any increase in QOL.

A Canadian study compared a group of THR and total knee replacement patients pre and post-operatively, using the SF-36 and the Western Ontario and McMaster Universities (WOMAC) Osteoarthritis Index (Allyson Jones et al 2001). They found that although patients did not achieve the same level of overall physical health as the general population, matched for age and gender, age was not a significant determinant of pain or function. This lies in contrast to another Swedish study, which used both the SF-36 and WOMAC to study THR patients prospectively, finding a significantly high correlation between older age and poor outcome scores (including pain) over a three year period (Nilsson et al 2003). We were interested in investigating whether there was a similar decline in the Australian cohort over a three year period, and whether the significant post-discharge gender difference found in the previous study (females taking longer to recover than males), remained the case at three years post-discharge.

## METHOD

The study sample was drawn from the group of 95 patients who participated in the original study following THR surgery (McMurray et al 2002). Approval was given by the ethical review committees of Griffith University and the Gold Coast Health Services District. Following signed consent to participate, telephone interviews were conducted by the same clinical nurses from the orthopaedic ward who gathered the initial data.

Data were collected at a median interval of 37 months since the last interview. Included were the questions of the SF-36, questions pertaining to number and type of comorbidities, age, family support (residential support, no support), type and frequency of health services used (weekly/fortnightly/monthly/less often) and satisfaction

with services (very unsatisfactory/unsatisfactory/satisfactory/very satisfactory). The SF-36 survey was administered first so that questions about other health problems would not influence how the patient responded to the survey (Ware et al 1993). Participants were also asked to report any hospital admissions since their last survey and to describe the extent to which they had re-engaged with their former (pre-operative) community/social lifestyle. Two further questions addressed the medical needs of patients for either hip problems, or other health needs.

## Data analysis

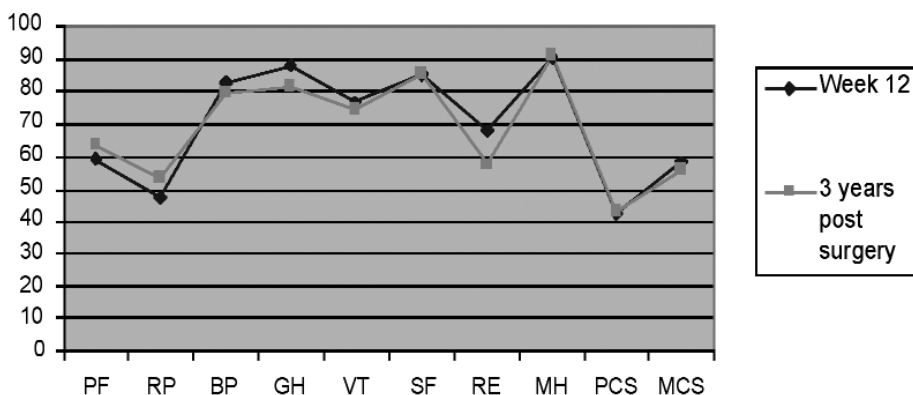
Responses on the SF-36 were analysed using SPSS version 10. The SF-36 provides indicators across eight dimensions of health and wellbeing as follows: Physical functioning - typical range of physical activities; Role physical - effects of physical health on performance of daily activities; Bodily pain - severity of pain and its effect on normal activities; General Health - self-assessed health status according to expectations and perceptions of health; Vitality - energy and fatigue levels; Social functioning - impact of health or emotional problems on social functioning; Role emotional - effects of emotional problems on performance of daily activities; Mental health - amount of time nervousness, anxiety, depression and happiness is experienced. Two summary measures based on the eight scales, constitute the Physical Component Summary (PCS) and the Mental Component Summary (MCS) (ABS 1995).

Descriptive statistics (frequencies, cross-tabulations, multiple response tables) were used to analyse demographic (age, gender, type of support) and clinical data (co-morbidities, hospital admissions), use of and satisfaction with services. Inferential statistics included independent and paired samples t-tests to test for between group and within group differences at the 0.005 level of significance. This level was achieved using a Bonferroni Correction to reduce the probability of making a Type I error when performing multiple tests. For single tests, the level of significance was set at  $p < 0.05$ . SF-36 scores were analysed according to gender, age and family support and compared with previous scores at 12 weeks post-discharge. Type and frequency of service utilisation were categorised according to GP, specialist, home and community nursing, physiotherapist, complementary health services, hospital and other (domestic and other informal care). Open-ended responses to the questions on health needs and social engagement were categorised according to frequency.

## FINDINGS

Of a possible 91 participants (four participants had died since the original study), 62 (68%) consented to participate. Others had moved residence or were unavailable. Using data from the original study, t-test and chi-square results indicated that the non-participants in

Figure 1: SF-36 scores at 12 weeks and three years post-discharge for THR surgery



the follow-up study did not differ significantly from the original cohort on the basis of demographic and clinical factors (age, gender, level of support). Within group comparisons indicated no significant differences on demographic or clinical factors, although some variations were found.

The gender composition was almost equivalent (females: 51.6%). However, most participants were aged in the over 75 category (59.7%), compared to those aged 65-74 (35.5%) and 55-64 (4.8%), and were receiving some degree of support (residential = 58.1%; non-residential = 22.6%; no support = 19.4%). Further chi-square analysis showed no gender differences in relation to age and type of support. A surprisingly low number of co-morbidities was reported by the study group in the original analysis, however independent samples t tests revealed a significant increase in total co-morbidities three years later. Most notable were increases in cardiovascular, diabetes/endocrine and musculoskeletal co-morbidities.

Independent samples t-tests were conducted to test for differences in HRQOL scores over time and to analyse gender differences. No significant differences were found in comparing the three year follow-up scores with those at 12 weeks post-discharge on any of the SF-36 measures. General Health scores did, however, show a decline approaching significance ( $t=2.574$ ,  $df=153$ ,  $p=0.011$ ), while Physical Functioning and Role Physical scores were the only ones to show an improvement, albeit non-significant (see figure 1). The three year follow-up scores showed a significant gender difference in the Physical Functioning scores. Women scored considerably lower than men ( $t=-3.437$ ,  $df=60$ ,  $p=0.001$ ), and fell below Australian population norms, whereas men's Physical Functioning scores were above the population norms. This is consistent with the scores at week 12, when again women scored significantly below men's scores and remained below the population norms for Physical Functioning. No significant differences were found in SF-36 scores in relation to age and level of support, although

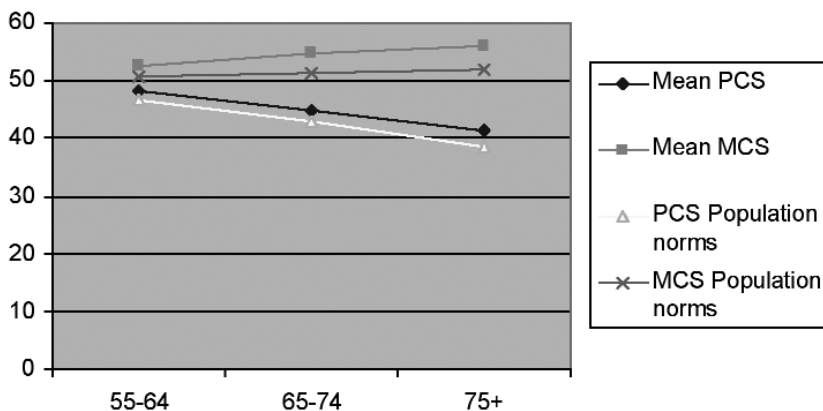
the composite scores showed a distinct trend: the mean PCS scores declined with age, while the mean MCS scores increased with age (see figure 2).

Thirty-six patients had one or more admission to hospital since THR surgery, with 15 having two or more hospital stays. One third of the group continued to see their general practitioner (GP) at least monthly. Specialist, physiotherapy and nursing services were used infrequently. As in the initial study, satisfaction ratings remained high for all services used. Half the participants reported having unmet health needs. As indicated in table 1 the majority of health problems were related to non-hip pain. Eight complained of persisting problems and pain associated with their hip replacement.

In relation to social engagement, 26 (42%) reported better participation in social activities than prior to surgery. For eight participants, the level of social activity remained unchanged. Seven reported a decline in social activity, but only one attributed this to the THR surgery. Four others stated their activity level had not changed because of the surgery.

## DISCUSSION OF FINDINGS

The major focus of this study was to see whether there is an ongoing role for nurses in facilitating continuity of care and HRQOL over a three-year period of recovery. One of the most interesting findings was the relatively different pattern of recovery for men and women which will be of interest to nurses preparing them for hospital discharge. At week 12, women's Mental Health Scores (MCS) were significantly higher than men's and by the three-year follow-up, men's MCS scores had become relatively similar. This could indicate that men's psychosocial recovery from THR takes longer than women's; an hypothesis for future investigation. Further study could also address the gender difference in women's Physical Functioning, which was significantly lower than

**Figure 2: Comparison of PCS and MCS scores with Australian population norms at three year follow-up post THR surgery****Table 1: Frequency of unmet health needs**

None	29
Other pain (back, shoulder, leg, ankle)	14
General problems (vision, skin, low HB etc)	12
Persisting problems/pain relating to hip replacement	8
Respiratory	3
Cancer	3
Cardiovascular	2
Prostate problems	2

men's across the entire period of three year recovery. It is important to note however, that this study did not capture the pre-surgical scores in Physical Functioning and our findings may therefore reflect a pre-existing gender difference in functional level. A study by Karlson et al (1997) noted that, given a choice, women opted for joint surgery later in the process of functional decline than men. Our findings may therefore reflect gender differences in help seeking as well as different patterns of physical recovery.

As expected, our sample revealed a clear trend for PCS (physical) scores to deteriorate with age and MCS (mental) scores to improve with age, which is consistent across the Australian population of older persons (ABS 1995). Older age also explains the increase in co-morbidities. Overall, our sample showed a significantly higher level of general health than the population, but this may have been related to selecting patients for surgery on the basis of their chances for improvement, or the way THR patients view their HRQOL. Although the SF-36 has known sensitivity to a range of clinical conditions and patient groups, including THR patients (Hopman-Rock et al 1999; March et al 1999; Kiebzak et al 1997; Lieberman et al 1997; Stucki et al 1995; McHorney et al 1994; Ware

1993), responses may not reflect how people view the quality of their lives in relation to the general population. Instead, they may be the product of a number of influences, including patients benchmarking the quality of their life after surgery according to their previous state of health (McMurray et al 2004). This may also explain the significantly higher MCS ratings than the Australian population.

As medical researchers have found, patients' high satisfaction ratings may indicate the dramatic improvements ensuing from THR surgery (Nilsdotter et al 2003; March et al 1999). Patients' open ended comments revealed few unmet needs related to their hip problems. Indeed, many spoke of their new health status as similar to 'winning the lottery'. This may be related primarily to pain relief, as other researchers have also found (Allyson Jones et al 2001; Knutsson and Bergbom Engberg 1999). Nearly half of our group reported improved social engagement, which is congruent with the high MCS scores and a cause for optimism for those seeking to promote social participation among this age group. For a smaller number, other illnesses continued to limit social participation.

Our results suggest there is a role for nurses in assisting these patients through the period of recovery, albeit one that changes over time. In the early period following recovery, nursing services were seen by the patients as very important. Their use of nursing services declined around four weeks post-discharge, however at three years, the most important role played by nurses seemed to be the telephone advice given in the context of gathering survey data. Anecdotal reports by the nurse researchers indicated that the telephone interviews provided opportunities for this group of patients to access information on a range of health issues, including the timing of using other health services. We interpret this in terms of improving the lines of communication between patients and their health service providers and it is an

indication of the importance of telephone advice during recovery from any type of surgery, which was also one of Naylor's (2000) conclusions.

## CONCLUSION

Despite the limitations of size and a single category of patients, this research can help inform the evidence base for discharge planning, particularly in relation to tailoring plans to differential needs of men and women in various age groups. This, in turn, can help inform appropriate and cost-effective decision-making in relation to health services use (Ridge and Goodson 2000).

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