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## Quality of Life in a mixed ethnic population after myocardial infarction

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### Abstract

**Background:** Although South Asian people are a significant ethnic group at increased risk of coronary heart disease and high mortality rates and experience greater delays with respect to diagnosis, referral and treatment, comparatively little is known about their quality of life during recovery from a myocardial infarction.

**Objectives:** We sought to determine and compare the impact of ethnicity on quality of life after myocardial infarction (MI) in a mixed ethnic population (South Asian and white people) in the UK.

**Methods:** A 2x2 mixed-group design with repeated measures on the second factor. The independent variables were ethnic group (white/South Asian) and time since MI (2 weeks/3 months). The dependent variables were the subscale scores on the Short-Form 36-item health survey (SF-36) and the Hospital Anxiety and Depression Scale (HADS).

**Results:** At 2 weeks, significant differences were observed between groups on 5 of the 8 SF-36 subscale domain scores, with the white group reporting higher quality of life. Significant improvement in reported quality of life occurred in both groups over time on all domains of the SF-36, except bodily pain. There was a significantly greater improvement in favour of the white group for the role-physical domain. There was no significant difference between groups in terms of anxiety or depression at 2 weeks. Both groups showed a significant reduction in anxiety and depression by 3 months, but the degree of reduction was not significantly different between them. At 3 months, there was no significant difference between groups in terms of anxiety scores, but the South Asian group scored significantly higher on the depression scale.

**Conclusions:** South Asian people have significantly poorer quality of life than white people after MI. While both groups showed improvement over time, South Asian people reported significantly less improvement in physical role function and were more depressed at 3 months. Identifying the factors accounting for such differences is important to develop models of care for delivering the most effective and culturally-sensitive interventions to this group.

### Keywords

Anxiety, culturally-sensitive care, depression, myocardial infarction, person-centered healthcare, Quality of Life, South Asian

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## Introduction

In the United Kingdom (UK) migrants from the Indian sub-continent (India, Pakistan and Bangladesh) and their children, as well as people from Kenya and Uganda descended from earlier immigrants from India, are a significant ethnic minority group. They are at increased risk of coronary heart disease and with other co-morbidity

and high mortality rates when compared to the white population [1-3]. Furthermore, the onset of coronary heart disease is earlier in South Asian people [4,5]. This may be indicative of ethnic differences in vascular remodelling [6,7]. There are also ethnic differences in healthcare-seeking behaviour and the way doctors manage South Asian people with chest pain [8-10]. South Asian people in the UK with myocardial infarction (MI) experience disproportionately greater delays with respect to diagnosis

and treatment [11,12], are less likely to use an ambulance [5], they wait longer for specialist referral [13,14] and are less likely to be treated with thrombolysis [15,16], or receive exercise testing [17] or angiography [18,19]. This is in addition to the many general barriers to accessing healthcare that face many South Asian people with heart disease [20,21]. A diagnosis of coronary heart disease will invariably have psychological, physical and social consequences, which require considerable adjustments from the individual in various life domains [22,23].

In Leicester, a major city in the midlands of the United Kingdom, a significant proportion of the population (around 25%) is of South Asian origin, almost three quarters of which are Gujarati Indians. Studies exploring the needs and experiences of these people in the first month after MI have found that they reported a lack of information, poor performance of activity, little lifestyle adjustment, poor expectations, lack of future plans, strong family support, dissatisfaction with the family doctor and a significant belief in fate [24,25]. Thus, they appear to have a poor quality of life during convalescence and recovery from MI compared to their white counterparts. However, there is a paucity of empirical data pertaining to the use of validated health-related quality of life measurements in this patient population.

We sought to determine health-related quality of life in a sample of South Asian MI patients at 2 weeks and 3 months after discharge from hospital and to compare them to a matched group of white patients.

## Methods

We studied patients admitted to the 3 coronary care units of Leicester over a 3-month period with a diagnosis of a first acute MI, who were able and willing to give their consent. Ethical approval was obtained from the institutional ethics committee.

Patients were invited by a research nurse to take part in the study. A Gujarati-speaking research nurse was used to recruit the Gujarati Indian patients. All patients were visited at home at 2 weeks and 3 months following discharge from hospital and were asked to complete the Short-Form 36-item health survey (SF-36) and the Hospital Anxiety and Depression Scale (HADS), offered in either a translated Gujarati or English version.

We used the SF-36 [26], judged to be the most reliable quality of life instrument among people with ischaemic heart disease [27,28] and widely used as a measure of health status in patients after MI [28,29]. The SF-36 consists of 8 sub-scales: Physical Functioning (PF), Role-Physical (RP), Bodily Pain (BP), General Health (GH), Vitality (VT), Social Functioning (SF), Role-Emotional (RE) and Mental Health (MH). The PF scale (10 items) reports the extent to which one's health limits physical activities, with low scores suggesting significant limitations in performing all physical activities. The RP scale (4 items) measures the extent to which physical health interferes with work or other daily activities, with the lower scores indicating greater impairment. The BP

scale (2 items) measures the intensity of pain, scores range from very severe and extremely limiting pain (low scores) to no pain (high scores). The GH scale (5 items) evaluates one's own perceived health, with low scores indicating poor self-health perceptions. The VT scale (4 items) assesses energy and vitality with low scores representing fatigue and exhaustion. The SF scale (2 items) measures the extent to which physical health or emotional problems affect normal social activities with low scores indicating significant disruption in social activities. The RE scale (3 items) provides an estimate of the degree to which emotional problems disrupt daily activities with low scores indicating greater impairment. The MH scale (5 items) provides scores that range from significant psychological distress (low scores) to optimal mental health (high scores). A reported Health Transition (HT) scale (1 item) rates health now compared to one year ago.

The SF-36 is a self-administered instrument that takes about 15 minutes to complete. The HADS is the most widely used instrument to assess anxiety and depression and was designed for use in medical settings. It comprises 2 subscales, each of 7 items, used to screen for and measure anxiety and depression. It was used here to screen for the prevalence of anxiety and depression [30,31].

Data were analysed using a 2 (ethnicity) x 2 (observation time) mixed-group analysis of variance (ANOVA) with repeated measures on the second factor. The 2 levels of ethnicity were white (group 1) and South Asian (group 2) and of observation time 2 weeks and 3 months following MI. The dependent variables were subscale domain scores of the SF-36 and the HADS.

## Results

Forty-one white and 41 Gujarati Hindu patients were enrolled into the study and completed the SF-36 and HADS at 2 weeks. Thirty-seven and 39 respectively completed the outcome measures at 3 months. Table 1 shows the demographic characteristics of the participants. The 2 groups were similar in terms of age and sex as intended. They were also similar in terms of marital status. The mean length of residency in the UK for the South Asian group was almost 30 years.

Table 1 Demographic characteristics of the sample

	Whites	South Asians
Male	32	32
Female	9	9
Mean age	61.2	59.9
Mean years living in the UK	-	28.9
Employed	16	9
Unemployed	3	9
Retired	16	20
Housewife	3	7
Married	35	36
Single	3	1
Widowed	0	4
Divorced	3	0

Table 2 Quality of life of participants at 2 weeks and 3 months. Results are mean (SD) scores

	Two weeks		Three months	
	White	Asian	White	Asian
<b>SF-36</b>				
Physical Functioning	59.3 (22.5)	43.9 (24.1)	73.3 (19.7)	54.1 (27.3)
Role-Physical	20.2 (33.2)	14.7 (24.1)	65.5 (41.3)	37.8 (38.8)
Role-Emotional	42.3 (42.7)	21.3 (32.8)	60.3 (41.4)	50.4 (45.8)
Social Functioning	61.8 (24.6)	52.9 (31.4)	76.8 (23.9)	58.4 (31.2)
Mental Health	66.1 (16.7)	56.8 (17.8)	72.5 (16.3)	59.2 (21.8)
Vitality	51 (14.3)	46.4 (21.6)	56.8 (18.2)	50.1 (22)
Bodily Pain	66.9 (27.6)	56.9 (32.3)	75 (25.1)	60.4 (30.3)
General Health	58.6 (21.9)	51.3 (21.1)	63.7 (22.6)	54.1 (23.4)
Health Transition	36.4 (23.2)	29.4 (20.5)	51.3 (28.8)	40.3 (27.2)
<b>HADS</b>				
Anxiety	6.75 (3.73)	7.37 (5.02)	5.42 (3.17)	7.12 (5.07)
Depression	4.47 (3.84)	6.63 (4.45)	3.64 (3.27)	5.8 (4.16)

The mean and standard deviation for each SF-36 and HADS domain are shown in Table 2.

PF scores were higher in the white group than the South Asian group ( $p<0.001$ ) and higher at 3 months than at 2 weeks ( $p<0.001$ ).

RP scores were higher in the white group than the South Asian group ( $p=0.01$ ) and higher at 3 months than at 2 weeks ( $p<0.001$ ). Though there was little difference between groups at 2 weeks, there was a larger difference in favour of the white group at 3 months ( $p=0.02$ ).

RE scores were higher in the white group than the South Asian group ( $p=0.05$ ) and higher at 3 months than at 2 weeks ( $p<0.001$ ).

SF scores were higher in the white group than the South Asian group ( $p=0.01$ ) and higher at 3 months than at 2 weeks ( $p<0.001$ ).

MH scores were higher in the white group than the Asian group ( $p=0.005$ ) and higher at 3 months than at 2 weeks ( $p<0.01$ ).

VT scores were similar for both groups ( $p=0.13$ ) and only slightly higher at 3 months than at 2 weeks ( $p=0.06$ ).

BP scores were higher for the White group than the Asian group ( $p=0.03$ ), but there was no difference over time ( $p=0.09$ ).

GH scores were similar for both groups ( $p=0.09$ ) and higher at 3 months than at 2 weeks ( $p=0.02$ ).

HT scores were similar for both groups ( $p=0.08$ ) and higher at 3 months than at 2 weeks ( $p=0.001$ ).

Case detection rates of the HADS anxiety and depression subscales were based on manual convention of subscale scores of 8 or above as possible cases [20].

Fourteen (39%) of the white and 22 (54%) of the South Asian group had clinically relevant anxiety at 2 weeks ( $p=0.29$ ). Eleven (31%) of the white and 19 (46%) of the South Asian group had clinically relevant anxiety at 3 months ( $p=0.24$ ). Anxiety scores were lower at 3 months than at 2 weeks ( $p=0.04$ ).

Six (17%) of the white and 15 (37%) of the South Asian group had clinically relevant depression at 2 weeks ( $p=0.09$ ). Three (8%) of the white and 13 (32%) of the South Asian group had clinically relevant depression at 3 months ( $p=0.02$ ). Depression scores were higher in the

Asian group ( $p=0.01$ ) and were lower in both groups at 3 months than at 2 weeks ( $p=0.01$ ).

## Discussion

Comparisons of the health-related quality of life of people of mixed ethnic populations are lacking and this is the first study in the UK to determine and compare health-related quality of life in South Asian and white patients after an MI. The findings demonstrate that on all domains of health-related quality of life as assessed by the SF-36, significant improvement occurs in South Asian and white patients following MI over time, a finding consistent with previous investigations of white patients only [32,33]. However, on most SF-36 domains (PF, RP, RE, SF, MH and BP) a significant difference was observed between groups in favour of the white group compared to the South Asian group. This novel finding in an MI population is consistent with a study of Indo-Asian coronary artery bypass surgery patients in the UK, who reported low SF-36 scores for 6 of the 8 domains [34]. However, on one key SF-36 domain, RP, the difference between groups increased significantly at 3 months, lending support to other evidence that South Asian cardiac patients are generally less active than their white counterparts [35-37], indicating that healthier, more active lifestyles should be a priority [38].

The findings regarding the HADS are of interest in that in terms of case classification there are no differences between groups as a function of ethnicity. Though the South Asian group had higher depression scores than the white group, this finding must be viewed within the context of case identification parameters of the HADS. The HADS was never conceived as an instrument to accurately measure depression in a linear way, it is simply a case detector. Consequently, though the observation of group differences is tantalising, the finding that there are no group differences in terms of case classification takes precedence with the interpretation of this particular instrument. Thus, it can be concluded that there is no evidence of ethnic group differences in terms of HADS-

assessed anxiety and depression through observation of significant differences in absolute scores on the depression subscale would suggest further exploration of this issue is warranted.

## Conclusion

Our findings indicate that South Asians have significantly poorer quality of life after an MI than white people. Further research is required to determine the factors accounting for differential quality of life outcomes as a function of ethnicity following MI. This would seem to be a priority in terms of developing models of care for delivering the most effective and culturally sensitive interventions to this group.

## Conflicts of Interest

No funding was received for this study and the authors have no conflicts of interest to declare.

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