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# Understanding Attitudes of Ethnic Minorities Towards Uptake of Cardiac Rehabilitation Services: A Qualitative Systematic Review

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# 1 Literature Review

## *1.1 Abstract*

The prevalence of cardiovascular disease (CVD) and coronary heart disease (CHD) varies across different ethnicities. Epidemiological studies show that people from a South Asian background, including Indians, Bangladeshis and Pakistanis have a higher risk of CHD. It is important to understand the risk factors that explain this increased prevalence, both conventional and unconventional i.e. applicable to the general population and also specific to a certain ethnic group. Modifying these risk factors is a vital part of secondary prevention measures to reduce the possibility of developing further cardiac disease. Cardiac rehabilitation is the recommended programme for post-MI care and aims to influence positively the underlying causes of cardiovascular disease through exercise and education. It has been shown to improve both cardiac mortality and morbidity. Despite the clear benefits of this intervention, uptake to cardiac rehabilitation is particularly low in ethnic minority populations. If the reasons and influences behind this can be understood, then the way that rehabilitation services are delivered can be altered to provide culturally sensitive care and maximize uptake.

## *1.2 Introduction*

Coronary heart disease (CHD) is a common condition in the UK, affecting around 2.3 million people (British Heart Foundation, 2013). The mortality rate of this disease has fallen since the 1970s due to a combination of factors such as Government policies, improved healthcare and public awareness. However, this has left a growing population of people in the UK surviving after cardiac events (Townsend et al., 2012). This population needs to be targeted with secondary prevention measures to reduce the risk of further cardiac disease. NICE guidelines for secondary prevention after myocardial infarction (MI) recommend that all patients should be offered a cardiac rehabilitation programme following a MI (NICE, 2013b). The British Association for Cardiovascular Prevention and Rehabilitation (BACPR) defines this as “the coordinated sum of activities required to influence favourably the underlying cause of cardiovascular disease” (BACPR, 2012). Cardiac rehabilitation has been shown to reduce mortality by 13-26% and morbidity by 47% (Heran et al., 2011; Lawler, Filion, & Eisenberg, 2011). Despite this, attendance of eligible participants to cardiac rehabilitation is low at 41% attendance rate for patients with heart attack, angioplasty and bypass surgery (British Heart Foundation, 2010). This low uptake to rehabilitation is particularly pronounced in ethnic minority populations (Tod, Wadsworth, Asif, & Gerrish, 2001). However, it is impossible to review accurately the proportion of ethnic minority populations attending cardiac rehabilitation as this information is often not recorded (Jolliffe et al., 2001). Secondary prevention measures are of particular importance to this group of cardiac patients, as many of them are

known to be at higher risk of coronary heart disease, such as those from the Indian sub-continent (Dodani, 2008).

### ***1.3 Ethnicity and Race***

Increased risk of coronary heart disease in certain ethnic minorities is a result of complex interactions between genetics, cultural and social differences. Ahmed & Al-Menyar (2014) highlight the difference between “race” and “ethnicity” though the two terms are often used interchangeably in literature”. “Race” is a categorization of subgroups of the population that share physical characteristics whereas “ethnicity” is the culture associated with distinct groups, such as diet, food and society (Ahmed & El-Menyar, 2014). Both race and ethnicity interact through associated factors to influence health.

The cardiovascular risk of ethnic minorities is pertinent to the UK, as the population is diverse. Because ethnicity is a self-identified category according to personal choices such as religion and language, the data recorded on ethnicity in the UK is based on perceived identity (Leung & Stanner, 2011). A UK Census from 2011 showed that 14% of the population in England and Wales are from an ethnic minority. The most prevalent group is Asian, encompassing Indian, Pakistani, Bangladeshi, Chinese and Other Asian, which altogether make up 7.5% of the population (Office For National Statistics, 2012). This number is expected to rise in the future, with Wohland, Rees, Norman, Boden & Jasinka (2010) estimating that 20% of the population in the UK will be from an ethnic minority by the year 2051 (Wohland, Rees, Norman, Boden, & Jasinska, 2010) .

#### ***1.4 Ethnicity and cardiac disease***

Of the ethnic minorities, South Asians have the highest rates of coronary heart disease. This denotes populations originating from India, Pakistan, Bangladesh and Sri Lanka. When comparing the proportion of deaths from CHD by country of birth, South Asia has the highest at a CHD mortality rate of 27% for men. However, this mortality rate is lower in those of South Asian descent but born in the UK (15%) (Scarborough et al., 2010), which indicates a strong environmental influence in the development of CHD.

The National Obesity Observatory highlighted Irish men as being at the highest risk of CVD and Indian and Pakistani men as being at highest risk of CHD in the UK. Not all ethnic minorities are at a higher risk with only 2.3% of the male Black African population suffering from CVD, compared to 13% women from the general population (National Obesity Observatory, 2011). Despite the evidence showing that the Irish population has the highest risk of CVD out of all the ethnic minorities, there is little literature on the subject. Most of the studies centred on ethnic minorities and cardiovascular disease focus on the South Asian population

Epidemiological literature shows that the high risk of CHD in South Asians is unaffected by emigration patterns. Anand et al., (2000) found that out of a cohort of 985 Canadians recruited from three different cities, South Asians had the highest prevalence of cardiovascular disease compared to those from a European and Chinese descent. This study noted that although the prevalence of disease was higher in the South Asian population, the European population were found to have a higher degree of atherosclerosis

(Anand et al., 2000). Conversely, a UK study comparing the angiographic features of Caucasians and British Asians concluded that neither group had a significantly higher level of triple vessel disease ( $p = .19$ ). However, the prevalence of non-discrete lesions were significantly higher in South Asians compared to Europeans ( $p = .0005$ ) (Dhawan & Bray, 1994). These findings should be interpreted with caution as the South Asian participants in this study were on average five years younger than the European participants. This could mean that at a particular given age, the difference in vessel disease could be significantly higher in South Asians. A more recent study by Hasan et al., (2011) examined the luminal diameters of South Asian and Caucasian patients undergoing cardiac catheterization at the Hospital of the University of Pennsylvania. Despite the South Asian patients being, yet again, younger than their counterparts, their triple-vessel disease was more severe and the mean percent stenosis higher (Hasan et al., 2011).

## ***1.5 Ethnicity and risk factors***

There are many risk factors for CHD that have been established from the Framingham Study, such as age, cholesterol levels and blood pressure (Wilson, 1994). Some of these factors are more pronounced in the South Asian population. A review of the literature by Nair & Prabhakaran (2012) gave an overview of the conventional risk factors for CHD, which can be extrapolated to the whole population and also the unconventional risk factors, which are specific to South Asians. The INTERHEART study of over 17,000 participants from 52 countries found that the most important controllable risk factors worldwide are low intake of fruit and vegetables, smoking, alcohol consumption, sedentary lifestyle, hypertension, dyslipidaemia, abdominal obesity and diabetes (Nair & Prabhakaran, 2012). These factors, which are influenced by cultural lifestyle, can partially explain the high risk of CHD in South Asians.

### ***1.5.1 Metabolic syndrome and obesity***

Risk factors such as smoking, blood pressure, obesity and cholesterol vary widely within the South Asian population and are not always more impaired than other ethnicities. However, glucose intolerance, central obesity, fasting triglyceride and insulin in South Asians are consistently found to be deranged compared to their European counterparts (Chaturvedi, 2003). This collection of metabolic disturbances is known as metabolic syndrome. Guidelines for the diagnosis of metabolic syndrome vary between organisations. Insulin resistance is the key criteria for the diagnosis of metabolic syndrome in the

World Health Organisation (WHO) guidelines and has to be present in order to make a diagnosis. Secondary criteria include hypertension, hypercholesterolemia, raised triglycerides, obesity and hyperalbuminaemia (Beilby, 2004).

A meta-analysis by Galassi, Reynolds and He (2006) shows that metabolic syndrome increases the risk of cardiovascular disease by 61%, though further analysis suggests that the risk is stronger in women than in men (Galassi, Reynolds, & He, 2006). A cross-sectional study of 4860 participants in London concluded that the prevalence of metabolic syndrome is highest in the South Asian population compared to those of European or African-Caribbean descent. Following the WHO classification of metabolic syndrome diagnosis, 46% men and 31% women from the South Asian population were found to have metabolic syndrome. This means that a high proportion of South Asians are at a high risk of developing CVD (Tillin et al., 2005). Although African-Caribbeans had a higher prevalence of metabolic disease than Europeans, Tillin et al., (2005) found no link between metabolic syndrome in African-Caribbeans and CHD. On the other hand, European men with metabolic syndrome have twice the risk of developing CHD than those without (Tillin et al., 2005).

South Asians may be more susceptible to metabolic syndrome as they are predisposed to central/abdominal obesity (waist:hip ratio  $>0.9$  in men,  $>0.85$  in women), which is a criteria for diagnosis. This is significant because central obesity is thought to be an important root cause of metabolic disturbances. Body Mass Index (BMI) is another measure of body mass that is quoted alongside central obesity in the guidelines for diagnosis of metabolic

syndrome. Both of these measurements are associated with metabolic disturbances alongside being an independent risk factor for cardiovascular disease (Wilson, D'Agostino, Sullivan, Parise, & Kannel, 2002). However, central obesity is also a predictor of negative cardiovascular outcomes (Hoefle et al., 2005). It results from excess intra-abdominal adiposity, towards which there is a genetic disposition. However, it is important to note that central obesity only presents if the energy intake of an individual exceeds that of their energy expenditure (Despres, 2006). The weight distribution in South Asian tends to be high in proportional body fat and centred around the abdomen (Sniderman, Bhopal, Prabhakaran, Sarrafzadegan, & Tchernof, 2007).

Central obesity is associated with cardiovascular risk because the adipocytes in the abdomen act like an endocrine organ and secrete inflammatory markers (adipokines). Several of these adipokines, such as IL-6, TNF $\alpha$  and Resistin are known to impair insulin signalling. Secretion of free fatty acids is also promoted, which act on the skeletal muscle and pancreas to induce insulin resistance (Lau, Dhillon, Yan, Szmitko, & Verma, 2005). The degree of insulin resistance is directly correlational to the level of obesity although Bajaj & Banerji (2004) found that Asian Indians develop insulin resistance easier and quicker than Caucasians in relation to their levels of central obesity. This would imply that there is also a genetic factor in play (Bajaj & Banerji, 2004; Banerji, Faridi, Atluri, Chaiken, & Lebovitz, 1999).

It has been suggested that the threshold for classification of overweight and obesity should be lowered in the South Asian population, as they are at a higher risk of disease, notably diabetes, at a lower level of obesity compared to the European population. This is reflected in the guidelines from WHO and

the International Diabetes Federation Guidance, both of which have lowered their thresholds for BMI and waist circumference for Asian populations. However, in the UK, NICE has maintained the same cut-off points for BMI and waist circumference across the ethnic populations as they consider evidence on the subject insufficient (NICE, 2013a).

### *1.5.2 Physical activity*

Other conventional risk factors for development of CHD are globalization and the associated lifestyle changes. These include unhealthy diets (through foods high in energy and low in fiber), sedentary lifestyle (due to improved transportation and technology) and high tobacco and alcohol use, all of which increase the risk of cardiovascular disease (Hawkes, 2006). Reduced physical activity levels and subsequent obesity is particularly prevalent in the urban areas of India, which are rapidly expanding. Ahmed & El-Menyar (2014) noted in their review of South Asian ethnicity and cardiovascular risk that the increased risk associated with an urban lifestyle was applicable within India and also in those that emigrated abroad (Ahmed & El-Menyar, 2014). This is relevant because a large proportion of immigrants in the UK choose to settle in cities. In fact, nearly a third of the population in London is composed of ethnic minorities (Leung & Stanner, 2011).

Sedentary lifestyle is particularly pronounced in South Asian adults, with Bangladeshi men being 45% less likely to meet guidelines for physical activity compared to the general population in the UK. Although not as extreme, Indian and Pakistani men are also found to be more sedentary than the

general population (Fischbacher, Hunt, & Alexander, 2004). Reduced physical activity level is also seen in the younger generations of South Asians. The Child Heart Healthy Study in England (CHASE) is a cross-sectional study that objectively measured the physical activity levels of 2071 children aged 9-10 years across a spectrum of ethnicities. South Asian children were found to have lower physical activity levels than their European and Black African-Caribbean counterparts (Owen et al., 2009). Lack of physical activity, especially amongst those from Bangladesh, is a reflection of their culture, which does not involve much exercise. In fact, in the commonly used language of Sylheti, there is not even a word for “physical activity”. Although there is a similar word that can be used in its place, there is an associated negative connotation (Leung & Stanner, 2011).

### ***1.5.3 Tobacco and alcohol use***

There is a significant gender influence on the levels of smoking in ethnic minority populations. All ethnic minority women have a lower rate of smoking than the general population in the UK, with figures from 2011 showing that only 3% Bangladeshi women are regular smokers. However, in stark contrast, Bangladeshi men are the second most prevalent smokers (36%), topped only by Black Caribbeans. In general, Indians have low rates of smoking compared to the other ethnic minorities. However, these statistics only take into account smoking tobacco (ASH, 2011). Chewing tobacco is a different form of tobacco that is commonly used by South Asians, particularly the Bangladeshi. The

tobacco is usually used as a paste (*zarda*) that is added to paan (betel leaf, Areca palm and lime paste) and chewed.

Unlike smoking, there has been little literature exploring the link between chewing tobacco and cardiovascular disease. The only studies seen have come from Sweden because the sale and distribution of most smokeless tobacco products are banned in the European Union, except for Sweden and Norway. A policy statement by the American Heart Association concluded that although the cardiovascular risk is lower in smokeless tobacco than in smoking, it is not recommended as a smoking cessation tool or as an alternative product. This is because there is some evidence suggesting that long-term use of smokeless tobacco could increase risk of fatal MI and stroke (Piano et al., 2010). Additionally, the use of chewing tobacco is associated with a raised 2.6 relative risk of oral cancer (Boffetta, Hecht, Gray, Gupta, & Straif, 2008).

Unlike the gender trends seen in smoking, more women than men chew tobacco. Over a quarter of Bangladeshi women chew tobacco compared to 19% of Bangladeshi men. It is particularly prevalent amongst the older generations, with 43% of women aged 35-54 chewing tobacco. The health perils of smoking is not recognised across a vast majority of South Asians. An education campaign by the NHS targeting tobacco use in Asian populations found that only a quarter of South Asians recognise the link between smoking and heart disease. Although the relationship between smoking and lung cancer is more established, only half of South Asians are aware of this (NHS, 2001).

Whilst smoking rates are relatively high in the ethnic minority populations, consumption of alcohol is commonly lower than the general population. A review of UK literature by Hurcombe, Bayley & Goodman found that the Irish and general population drank the most frequently, followed by Black Caribbean, Black African, South Asians and Chinese; this trend is also reflected in intensities of alcohol consumption (Hurcombe, Mariana, & Goodman, 2010). Alcohol is significant because whilst a light-moderate alcohol intake ( $\leq 1$  drink/day) can be cardio protective, a heavy intake can significantly increase the risk of stroke (relative risk 1.62) (Ronksley, Brien, Turner, Mukamal, & Ghali, 2011).

#### ***1.5.4 Diet***

Diet is an important risk factor for CVD in ethnic minorities. Although the Western diet adopted by the general population in the UK tends to involve more unhealthy eating habits than those of ethnic minorities, there can be variations within ethnic subgroups. Leung and Stanner (2011) gave an overview of dietary patterns amongst ethnic minorities living in the UK. They found that ethnic minorities had a higher intake of fruit and vegetables than the general population, with more men and women from ethnic minorities fulfilling the “5 A Day” recommendation. This could be due to the fact that many ethnic minority diets are partly or fully vegetarian, such as in Buddhists and Hindus. The average intake of energy per day was also highest in the general population, with the Chinese consuming the least. However, 39.4% of

the energy in the Chinese diet was derived from fat, which is higher than the recommended 33% (Leung & Stanner, 2011).

Salt is another significant component in the diet as a high intake is associated with hypertension, which is a precursor to CVD and stroke. The UK recommended salt intake is a maximum of 6g a day for those aged 11 years and older (CASH, 2014). However, a study by Earland et al. (2010) found that African-Caribbean adults used around 8.1g of salt each day. This could explain the high prevalence of hypertension in the black population (Carson et al., 2011). The evidence on this matter is conflicting as the *Family Food Survey* concluded that the general white population had the highest intake of salt. Variance could be due to differences in data methodology, such as only measuring salt put in food whilst cooking and not taking into account the salt added at the table. This is particularly applicable as ethnic minorities are more likely to add salt at the table before tasting their food than the white population (Leung & Stanner, 2011).

As mentioned above, the South Asian population has the highest risk for developing CHD out of all the ethnicities. One reason for this is that although LDL-cholesterol (colloquially referred to as “bad cholesterol” due to its association with atherosclerosis) levels in Indian and Pakistani populations are similar to those from the general population, levels of HDL-cholesterol (“good cholesterol”) are low. Conversely, LDL-cholesterol levels are low in African-Caribbeans, which could partially explain their low risk ratios for CHD (Leung & Stanner, 2011).

### ***1.5.5 Unconventional risk factors***

In addition to the conventional risk factors for cardiovascular disease that are shared by many different ethnicities, there are unconventional risk factors that are only applicable to certain populations. South Asian ethnicities have the highest prevalence of CHD and there has been much research into the subject to explain this. Nair and Prabhakaran (2012) reviewed the evidence on this and summarised them as C-reactive protein, dysfunctional HDL and telomere length. CRP levels have been found to be higher in Asian Indians than Europeans. This confers a cardiovascular risk because elevated CRP is associated with CAD and diabetes (Mohan, Deepa, Velmurugan, & Premalatha, 2005). Studies have found that high CRP levels can trigger atherosclerosis, the cornerstone of CAD, as it promotes LDL and vascular cell adhesion molecules. The source of elevated CRP is thought to be central adiposity (raised in South Asians, as mentioned above) which contributes cytokines that mediate the production of CRP in the liver (Nair & Prabhakaran, 2012).

Dysfunctional HDL and telomere length are other factors that have been investigated. South Asians have comparatively low levels of HDL-cholesterol. However, evidence has found that in addition to this, there is also a high prevalence (up to 50%) of dysfunctional HDL. Not only is dysfunctional HDL ineffective in preventing atherosclerosis, but it also promotes inflammation, contributing to atherogenesis (Dodani et al., 2008). Lastly, telomere length is found to be shorter in those with multiple vessel disease, though a link is yet to be established between telomere length and CAD in South Asians (Nair & Prabhakaran, 2012).

The literature reviewed makes it clear that South Asians, encompassing Indian, Bangladeshi and Pakistani populations, are the non-white ethnic minority at the highest risk of developing CHD. The description “non-white ethnic minority” is used because statistics from the UK show that the Irish population are at an equally high risk of CHD and CVD. However, there is little research focused on this group and they are often grouped with the white general population in literature. Therefore, the focus has been much more on South Asians and CVD risk. Conventional risk factors for CHD have been described, such as diet, alcohol, smoking and physical activity. These risk factors can be modified for primary and secondary prevention of cardiac disease.

## **1.6 Cardiac rehabilitation**

The National Institute for Health and Care Excellence (NICE) is the body that produces health guidelines for the UK. They recommend that all patients should be offered cardiac rehabilitation (CR) after an MI (NICE, 2013b). Although programmes vary across the country, they always contain an exercise component alongside lifestyle risk factor management and health behaviour change classes (BACPR, 2012). CR has been shown to improve mortality and morbidity in cardiac patients. A range of studies have found that a comprehensive cardiac rehabilitation programme, including exercise can reduce re-infarctions by 47%, cardiac mortality by 26-36% and total mortality by 13-26% (Heran et al., 2011; Lawler et al., 2011). This evidence shows that participating in cardiac rehabilitation confers a great health benefit.

Despite the evidence promoting CR, there are still high numbers of patients that don't attend or drop out prematurely from the programme. Although figures vary across studies, around 50% of patients eligible for CR do not attend (Beswick et al., 2005). Maximizing the uptake to CR is important for both the patient and the NHS, as it is also cost-effective (Yu et al., 2004). This is a challenge that is highlighted by the British Association for Cardiovascular Prevention and Rehabilitation (Buckley et al., 2013).

It is known that CR is particularly underutilized in ethnic minority populations (Jolly et al., 2005; Mochari, Lee, Kligfield, & Mosca, 2006; Rees et al., 2005). However, literature regarding CR in ethnic minority groups has been applied with caution, as there has been no collaborative approach to auditing and data collection. Therefore, exact numbers regarding uptake to CR in ethnic

minorities are not known (Beswick et al., 2004a; Rees et al., 2005). The National Audit of Cardiac Rehabilitation has been established as the official audit to measure the quality of CR services. The first annual report was published in 2007, which found that “certain ethnic groups are not attending” (British Heart Foundation, 2007). However, exact figures for attendance of ethnic minorities are still unknown as not all centres around the UK record the ethnicities of their patients.

### ***1.7 Influences on attendance to cardiac rehabilitation***

It is important to understand why uptake to CR is so low so that modifications can be made to services to maximise attendance. Many studies have explored this subject, mainly through qualitative measures. A systematic review of ten databases by Clark et al. (2012) identified 90 studies that examined influences on attendance to CR. Barriers to attendance included poor knowledge regarding what CR involved, poor health beliefs, negative opinions on the health system and financial restraints (Clark et al., 2012). A positive view of services, family and social support and communication with health professionals were found to be facilitators to attendance. However, these studies only examined the general population. If the lower attendance of ethnic minorities is to be understood, studies need to be aimed at this particular population.

Literature on attendance to CR that is specific to ethnic minorities is relatively sparse, with a review of six databases by Galdas, Ratner and Oliffe (2011) identifying only 11 studies. However, this review exclusively examined the attitudes of South Asians rather than all ethnic minorities. Because the literature available was so limited, the authors decided to undergo a narrative review rather than a formal systematic review. Themes identified included negative attitudes towards exercise, cultural and religious attitudes to health, programme access and language (Galdas, Ratner, & Oliffe, 2012).

South Asian cardiac patients reported a gender bias in the support for CR within families; men were more likely to receive help in modifying risk factors than women. Women were also reluctant to participate in exercise activities as

they had never been in such an environment and were also concerned about their safety regarding exercise outdoors. Religion was found to have a significant impact on health beliefs and many South Asians believed their health and recovery to be decided by God. Placing the responsibility on an external locus diminishes the patients' perceived control (Galdas et al., 2012). Transport and accessibility to programmes are factors pertinent to both ethnic minorities and the general population, as highlighted in literature (Clark et al., 2012; Cooper, Jackson, Weinman, & Horne, 2002; Galdas et al., 2012; Jackson, Leclerc, Erskine, & Linden, 2005). The last theme highlighted in the review by Galdas, Ratner & Oliffe (2012) was communication and language, which has been noted as being the most important barrier to attendance (Tod et al., 2001). Many of the South Asian participants could not speak English, yet they were not given CR information in their preferred language and many were not offered an interpreter.

The review by Galdas, Ratner & Oliffe (2012) is the only one to this date that pools together studies regarding attendance to CR in ethnic minorities. However, the authors chose to focus exclusively on South Asians. There is a gap in the literature for formally identifying studies examining barriers to attendance across all ethnic minorities. If common themes from the research emerge, then potential solutions can be identified that are applicable to the wider ethnic minority population rather than one specific subgroup. It is particularly important to understand reasons for non-attendance to CR as well as adherence. In Manchester, patients are offered CR through the post after an MI. If they choose not to attend, then they will have no further contact with the CR team (J. Brett, cardiac rehabilitation coordinator at MRI, personal

communication, October 8, 2013). It is important that barriers for these patients are identified as it is not guaranteed that they will receive secondary prevention advice elsewhere.

## ***1.8 Conclusion***

In summary, South Asians (Indian, Pakistani and Bangladeshi) and Irish populations are the ethnic minorities with the highest risk of CVD and CHD in the UK. However, general literature does not separate Irish populations from the white general population and there is little research focusing on the Irish. Conversely, plenty of studies have explored the risk of CHD in South Asian populations, with conventional and unconventional risk factors being identified. These risk factors are representative of lifestyle choices that are associated with South Asian culture. For example, physical activity does not have a large place in the culture of many South Asians, which can lead to a sedentary lifestyle. Chewing tobacco is another cultural habit that is prevalent amongst Bangladeshis. Other modifiable risk factors include diet. Compared to the general white population, the diet in South Asians is healthier, with more fruit and vegetables, less salt and fat and a lower intake of alcohol. However, cardiovascular risk is a result of both environmental and genetic factors. South Asians commonly exhibit a collection of metabolic disturbances including dyslipidaemia, hypertension, insulin resistance and abdominal obesity. Collectively, this set of signs is known as metabolic syndrome, which increases the risk of cardiovascular disease by 61%.

It is important to target the risk factors for CHD that can be modified to prevent further cardiac events. NICE recommend that all patients should be offered a comprehensive CR programme post-MI. This involves coordinated activities aimed to reduce underlying causes of cardiovascular disease, such as exercise and health education. Participation in CR has been shown to reduce

cardiac mortality and morbidity significantly, alongside being economically cost-effective. Despite this, attendance to CR is low with only half of eligible participants attending the sessions. This number is estimated to be particularly low in ethnic minorities. Exact figures are not known because the ethnicity of patients is not recorded across all rehabilitation centres. Standardising the recording of ethnicities across UK rehabilitation services is needed so that accurate figures for attendance can be collected.

Thus, not only are ethnic minorities such as South Asians at a higher risk of CHD, they also have a lower rate of attendance to cardiac rehabilitation. It is important to understand the barriers to attendance and influences in the decision to not participate so that services can be modified to increase uptake. Studies need to be focused on ethnic minorities, as their influences will be different from the general population. Barriers to attendance have been identified in a previous systematic review that focused on South Asian populations. Themes included the influence of religion and education, negative attitudes towards exercise and language barriers.

This systematic review will identify up-to-date literature on the attendance to cardiac rehabilitation in all ethnic minorities, including influences, barriers and facilitators. The findings will be summarised from common themes that emerge, which can be used to facilitate culturally appropriate care in cardiac rehabilitation to maximise uptake from ethnic minority populations.

Research question: Understanding attitudes of ethnic minority populations towards uptake of cardiac rehabilitation services.

## 2 Qualitative Systematic Review

### 2.1 *Journal Choice*

Key words: attendance, access, secondary prevention, adherence.

*European Journal of Cardiovascular Nursing.* This journal has been chosen because it publishes papers specifically for cardiovascular care. The Journal website specifies that they want scientific contributions that can be related to education, patient care or organisational aspects. The findings from this review will be able to inform healthcare professionals of cultural-specific care, which they may not be aware of. Findings can also potentially change the way that cardiac rehabilitation services are offered to maximize uptake in ethnic minorities. The structure and format of articles is comprehensive and similar to the layout of this systematic review.

## ***2.2 Introduction***

Cardiac rehabilitation (CR) is an intervention that has been shown to decrease cardiac mortality by 26-36% and total mortality by 13-26% (Heran et al., 2011; Lawler et al., 2011). The efficacy of this is recognised by NICE, which recommends that all patients should be offered a CR programme after MI for secondary prevention (NICE, 2013b). Programmes vary across the UK, but always contain an exercise component. Health behaviour and risk factor modification are facilitated through diet advice, smoking cessation and education (BACPR, 2012). Despite the clear benefits of CR, attendance to these programmes is low, with only half of all eligible participants participating (Beswick et al., 2005). Uptake is particularly low in ethnic minorities though exact figures are not known as there is no coordinated approach to audit data collection (Beswick et al., 2004b). It is especially important to target this under-represented group, as certain ethnic minorities are more susceptible to coronary heart disease (CHD).

South Asians, denoting people from Bangladesh, Pakistan, India and Sri Lanka have the highest risk of CHD. There are clearly both genetic and environmental influences in this elevated risk as also seen in South Asians that have emigrated abroad (Anand et al., 2000; Scarborough et al., 2010). The Framingham study, initiated in 1948, was a milestone study in identifying risk factors for CVD. These included smoking, hypertension, hypercholesterolemia, sedentary lifestyle, obesity and psychosocial factors (Framingham Heart Study, 2014). The INTERHEART study has since built on this knowledge to show that 90% of the risk for CAD can be attributed to the

risk factors mentioned above, regardless of ethnicity or gender (Yusuf et al., 2004). These factors can explain the high risk of CHD in South Asians, as they are more predisposed towards central obesity, dyslipidaemia, hypertension and glucose intolerance. Together, this collection of signs is known as metabolic syndrome, which is associated with a 61% increase in cardiovascular risk (Galassi et al., 2006).

Other risk factors such as smoking are more pronounced in ethnic minorities, with the highest prevalence of smoking in the UK being in Black Caribbean and Bangladeshi men. Thus it is clear that ethnic minorities, especially South Asians would benefit from risk factor modification in the form of CR. It is important to understand why this under-represented group has such a low attendance to CR so that provision of services can be altered to address this.

### **2.3 Methodology**

Background reading into the subject of attendance to cardiac rehabilitation showed that there was a wealth of literature on barriers to attendance and adherence in the general population. However, less research had gone into the subject specifically for ethnic minority populations, and the majority of literature that was available was centred on South Asians. The aim of this systematic review is to evaluate studies regarding attendance/adherence to cardiac rehabilitation in all ethnic minorities by following the five steps of a systematic review (Khan, Kunz, Kleijnen, & Antes, 2003).

#### **Primary Objectives**

- Identify barriers and facilitators to attendance/adherence in ethnic minorities.
- Identify common themes that are applicable to all ethnic groups.

#### **Secondary Objectives**

- Identify potential interventions or alterations in the provision of cardiac rehabilitation services that can address these barriers.

Because this systematic review is an exploratory one as opposed to assuming pre-identified barriers, only qualitative studies or mixed design studies were included. Qualitative studies can probe deeper into exploratory questions compared to quantitative methods and in this case, give a greater understanding of how patients view and understand CR. No time or language restrictions were applied to the literature search. The databases used are

EBSCOhost CINAHL, EBSCOhost PsycINFO, EBSCOhost socINDEX, OVID Medline, OVID Embase and Pubmed. The rationale behind choosing these databases were so that the subject could be explored from a psychological, sociological, public health, nursing and medical perspective. Combinations of search terms (Table 2.1) were used to identify papers, which were then selected by comparing titles and abstracts against the inclusion and exclusion criteria (Table 2.2). Remaining papers were fully read and further excluded depending on criteria. The quality of resultant papers was assessed using the Critical Appraisal Skills Programme (CASP) tool for qualitative research and scored out of 10.

The findings from the papers were analysed using a meta-ethnography technique. This is the most appropriate technique because it adopts an interpretation development approach as opposed to a summation, which is suitable for an exploratory review such as this. Although other techniques such as thematic analysis and grounded theory can also be used, meta-ethnography is most appropriate for small numbers of papers as in this case (Dixon-Woods, Agarwal, Jones, Young, & Sutton, 2005). This strategy consists of three steps as follows:

1. Reciprocal translational analysis (RTA)
2. Refutational synthesis
3. Lines-of-arguments

**Table 2.1.** Search terms used

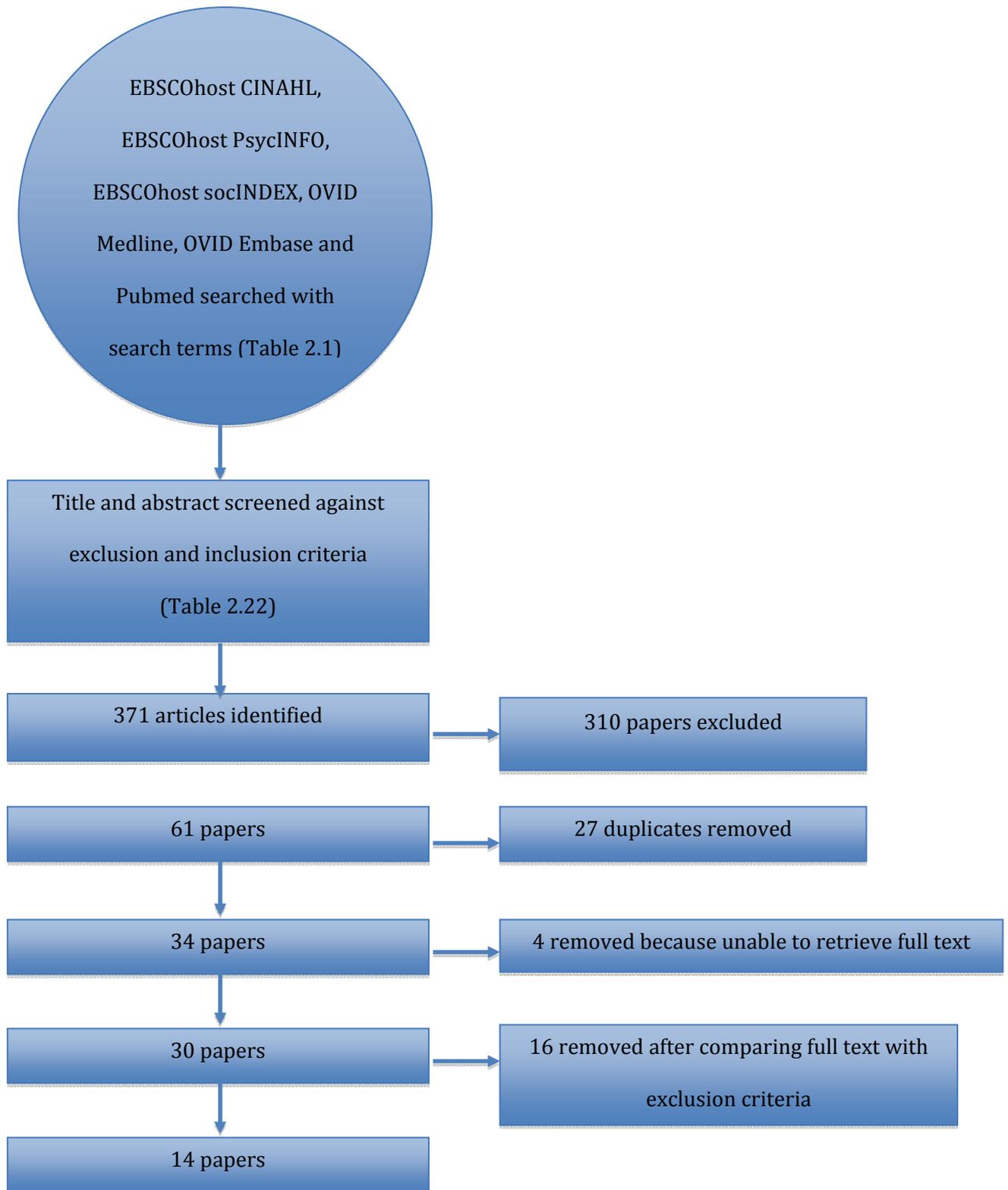
<b>Search Terms</b>
Attendance
Participation
Access
Adherence
Uptake
Cardiac rehabilitation
Ethnic minorit*
Ethnic*

**Table 2.2.** Criteria for identifying papers

<b>Inclusion Criteria</b>	<b>Exclusion Criteria</b>
Qualitative design studies	Review articles
Ethnic minority participants of all age ranges and genders	Perspective papers
Understanding attendance and/or adherence to cardiac rehabilitation	Quantitative studies
Primary studies	No full text
	Non-traditional cardiac rehabilitation programmes
	Interventions

## **2.4 Results**

The systematic review resulted in 371 papers being identified from the six databases chosen (Figure 2.1). These are summarised and scored using the CASP tool in Table 2.3. In total, 580 participants (253 males and 179 females) were interviewed across three different countries. The majority of studies were from the UK (n= 8), with the rest from Australia (n=3) and Canada (n=3). The quality of the papers ranged from a CASP score of 6-9, with an average score of 7.5. Most of the studies involved South Asian participants (n=11), but four of the papers interviewed Aboriginal and African Caribbean participants. Themes were compared and analysed against each other to draw out the common themes. For example, lack of knowledge about CR, cardiac disease and education are commonly quoted in the studies, which can be grouped together in the same theme. Overall, six overarching themes were identified from the studies.



**Figure 2.1.** Flowchart of paper identification

**Table 2.3.** Characteristics of included studies (n=14)

First Author	Year	Country	Sample Size	Male:Female participants	Data Analysis	Themes Identified	CASP Score
Artuso	2013	Australia	34	13:21	Thematic conceptual matrix	Language; knowledge, perceived need; past experiences; mistrust; fear; competing priorities; avoidance relationships; basic needs; communication; support; organisation; education; transport; cultural awareness	6
Astin	2008	UK	119	36:29	Framework analysis	Provision of information; support; dietary change; exercise	7
Banerjee	2010	Canada	16	13:3	Thematic analysis	Provision and knowledge of CR information; transport; programme hours; physician referral; support	8
Chauhan	2009	UK	20	13:7	Framework analysis	Knowledge; negative experiences; social network; gender and religion; health beliefs; transport; programme accessibility	9
Darr	2008	UK	65	36:29	Framework analysis	Health beliefs; fate; exercise; dietary intake; stress management	6
Farooqi	2000	UK	44	24:20	Content analysis	Diet; exercise; dietary intake; knowledge; programme accessibility; health beliefs	6

Galdas	2009	Canada	15	10:5	Thematic analysis	Health beliefs; dietary advice; interaction with healthcare professionals; transport	9
Grewal	2010	Canada	16	15:1	Content analysis	Knowledge of CR; referral; personal autonomy	8
Haghshenas	2011	Australia	25	5:20	Content analysis	Programme accessibility; information systems; exercise; dietary habits; health beliefs; support; knowledge; education	9
Jolly	2004	UK	41	30:18	Grounded theory	Unwillingness to attend CR on own; language; health belief; programme accessibility; illness	6
Jones	2007	UK	49	33:16	Charting	Alternative exercise; health problems; personal; programme accessibility	8
Shepherd	2003	Australia	88	Not disclosed	Content analysis	Knowledge of CR; cost; family; support; dietary change	6
Visram	2004	UK	13	Not disclosed	Thematic analysis	Exercise; language; cultural beliefs; programme accessibility and practical considerations; family; support; appropriate venues	8
Webster	2002	UK	35	25:10	Content analysis	Knowledge; health beliefs; poor expectations; family support; dissatisfaction with family doctor; fate	9

### ***2.4.1 Knowledge***

Lack of knowledge about CR was highlighted in four of the papers identified (Chauhan, Baker, Lester, & Edwards, 2010; Grewal et al., 2005; Shepherd, Battye, & Chalmers, 2003; Webster, 2002) and was quoted as the most common reason for non-attendance by Aboriginal participants in the study by Shepherd, Battye & Chalmers (2003). The participants in these studies had little understanding regarding what CR involved, with many mistaking it as purely exercise or some form of exercise testing. Grewal et al., (2005) also reported that participants were not aware of the benefits of CR and therefore thought that it was not worth attending CR.

One of the most prevalent themes throughout the studies was a lack of knowledge regarding cardiac disease and its associated risk factors, which was reported by in seven papers (Artuso, Cargo, Brown, & Daniel, 2013; Chauhan et al., 2010; Darr, Astin, & Atkin, 2008; Farooqi, Nagra, Edgar, & Khunti, 2000; Galdas & Kang, 2010; Shepherd et al., 2003; Webster, 2002). This is significant because Chauhan et al., (2010) found that health knowledge was directly related to decisions to participate in secondary prevention services. Artuso, Cargo, Brown & Daniel (2013) noted that the lack of knowledge regarding risk factors affected participants' perceived need to participate in CR. In some cases, participants thought that surgical procedures had "cured" them of their disease and therefore there was no need to make additional changes to lifestyle.

In some cases, the link between smoking, diet and CHD was unknown and even when participants did know that dietary adjustments had to be made, they were unable to apply the practical Western dietary advice given in CR to their own diets

(Darr et al., 2008; Farooqi et al., 2000; Galdas & Kang, 2010). Participants in the study identified by Darr et al., (2008) were aware of the family history connection and CHD; however, they then made the assumption that there was nothing they could do to prevent disease. These findings make it clear that it is important to assess the level of knowledge existing in cardiac patients, especially in education classes. South Asian women were found to have little understanding of human anatomy and physiology, which was not appropriate for the level of education provided in the earlier rehabilitation sessions (Visram, Crosland, Unsworth, & Long, 2004).

#### ***2.4.2 Health beliefs, religion and fate***

Health beliefs and religion were two themes that were found to be tightly interwoven in the results from eight of the studies, specifically in the South Asian population. Many participants reported beliefs that their cardiac event and subsequent recovery were in the hands of God and that the events were destined in fate, which meant that responsibility was removed from the individual (Chauhan et al., 2010; Darr et al., 2008; Galdas & Kang, 2010; Webster, 2002). However, findings were inconsistent across studies with some participants describing their event as a sign from God that they were not looking after their health and therefore was an enabler for lifestyle change (Darr et al., 2008; Galdas & Kang, 2010). These disparities highlight the subtle difference between religion and fatalism- the thought that God is in control of your health versus the thought that your health outcomes are written in fate and are unchangeable.

Many participants were not aware of the risk factors for CHD, with the most attributable cause noted across studies being stress (Astin, Atkin, & Darr, 2008; Darr et al., 2008; Farooqi et al., 2000; Jolly, Greenfield, & Hare, 2004; Webster, 2002). It is important to understand the health beliefs of cardiac patients as their attitudes and illness perceptions have a large influence on help-seeking behaviours (Haghshenas, Davidson, & Rotem, 2011).

### ***2.4.3 Language and communication***

Limited language and communication were cited as barriers to attendance and adherence in nine of the studies. Although most of the ethnic minority participants could not understand English, interpreters and translated materials were limited; this led to a variety of problems (Haghshenas et al., 2011). Firstly, participants reported feelings of fear as healthcare professionals were communicating with them in a language that they did not understand about health issues that were important. (Artuso et al., 2013; Chauhan et al., 2010; Galdas & Kang, 2010; Jolly et al., 2004; Webster, 2002). Secondly, because availability of interpreters was limited, children often translated consultations. This was problematic because a few children wanted to shield their parents from stress and anxiety and therefore omitted negative aspects of the information given by the physician (Astin et al., 2008). However, these were isolated cases; more commonly, children would get frustrated at the responsibility of translating and would fail to explain things properly (Farooqi et al., 2000). Thirdly, triadic communication can be isolating, with physicians frequently bypassing their patient to talk directly to the interpreter/child (Chauhan et al., 2010).

Not only was it impossible to understand the information discussed during face-to-face consultations due to language barriers, but written materials were also in English (Grewal et al., 2005; Haghshenas et al., 2011; Webster, 2002). Many participants felt that there was a lack of communication between primary and secondary services as patients were often not followed-up after leaving hospital and there was poor continuity of care (Artuso et al., 2013; Shepherd et al., 2003).

#### ***2.4.4 Programme Accessibility***

Practical problems regarding programme accessibility were highlighted in nine of the studies. The most frequent barrier found was transport as many participants found it difficult to access their CR programmes (Artuso et al., 2013; Banerjee, Grace, Thomas, & Faulkner, 2010; Chauhan et al., 2010; Galdas & Kang, 2010; Grewal et al., 2005; Haghshenas et al., 2011; Jolly et al., 2004; Shepherd et al., 2003; Visram et al., 2004). This was particularly applicable in the Aboriginal population as they often lived in remote areas and had no access to telephones or vehicles (Artuso et al., 2013). Some participants reported taking taxis or being driven in by relatives; however, the timing of classes often clashed with the working hours of relatives and costs of taxis and petrol were also barriers (Galdas & Kang, 2010; Haghshenas et al., 2011).

Timing of classes was not just a barrier regarding transport, but also for the religious reasons. Visram et al., (2004) reported that some of the classes were held in the early afternoon or on Fridays, which clashed with the call to prayer for Muslims.

Flexible programme hours were found to be an enabling factor for attendance alongside referral methods.

Most CR referrals in the studies were automatic and electronic with many participants claiming that they were not spoken to about CR whilst in hospital. However, participants were more likely to access services if they were referred by physicians, especially in the South Asian population as physicians are very respected in their culture (Banerjee et al., 2010). This conclusion was reflected in two other studies though the specific role of the physician was not emphasized (Grewal et al., 2005; Shepherd et al., 2003).

#### ***2.4.5 Support***

The support of friends, other patients and family was found to be an important contributor for encouraging attendance to CR. This was particularly applicable when participants felt that they lacked communication in the health system due to language barriers (Artuso et al., 2013; Banerjee et al., 2010; Galdas & Kang, 2010; Jolly et al., 2004; Visram et al., 2004). Despite this, some healthcare professionals did not involve family members in the treatment of some participants (Artuso et al., 2013). Participants reported feelings of shyness and reluctance to attend sessions on their own and felt more encouraged if they were accompanied. This also eased the minds of some South Asian families, as attending earlier rehabilitation sessions alongside patients meant that they could assess the cultural appropriateness of the services (Chauhan et al., 2010; Jolly et al., 2004; Visram et al., 2004).

Family support can be a barrier as well as enabler for attendance to CR. A few participants reported that their families were reluctant to let them do anything physical during their early recovery, which led to a loss of their independence (Astin et al., 2008). The large families of Aboriginal participants also made it hard to make lifestyle changes, particularly dietary adjustments in such a large setting (Shepherd et al., 2003). Continuous support and discussion with physicians and rehabilitation staff about the changes that were being made during sessions was thought to be important by participants for the success of their CR (Banerjee et al., 2010; Galdas & Kang, 2010)

#### ***2.4.6 Gender and Cultural influences***

Issues surrounding gender were commonly identified in the studies, particularly in those with South Asian participants. Mixed gyms and exercise classes were a barrier for many women who viewed it culturally inappropriate. South Asian families often had a significant influence on the decisions of women and reinforced this cultural problem if they deemed rehabilitation as inappropriate; they would object to the women participating in the programme. Cultural barriers also extended to exercise in an external environment as South Asian women felt that it undermined their values to walk on their own (Chauhan et al., 2010; Farooqi et al., 2000; Haghshenas et al., 2011; Visram et al., 2004). There were also difficulties surrounding appropriate clothing for exercise as many women wore long scarves and head dresses. Rehabilitation practitioners, who felt that their position as a positive role model was undermined if they wore typical exercise clothing (tracksuits as opposed to traditional South Asian dress), also reported these difficulties (Visram et al., 2004).

Structured exercise does not play a common part in South Asian cultures and most of the women had never been in a gym or used sports equipment before. This meant that exercises sessions had to be adjusted for these participants; for example, some women could not use pedals bikes, as they had never learnt how to ride a bicycle (Chauhan et al., 2010; Visram et al., 2004). The role of women in families was also highlighted as a barrier in five studies (Artuso et al., 2013; Astin et al., 2008; Darr et al., 2008; Jones, Jolly, Raftery, Lip, & Greenfield, 2007; Visram et al., 2004). Typically, South Asian women were responsible for cooking food for the entire family. This made it difficult to make dietary changes as in some cases their husbands were unwilling to compromise taste for healthier alternatives. However, if the male was the one making necessary lifestyle changes, then the family would be expected to adapt to his diet (Astin et al., 2008). Difficulties for women were not just seen in the South Asian population. Aboriginal women were also reluctant to participate in CR because of domestic duties and were worried about leaving their children (Artuso et al., 2013).

## *2.5 Discussion*

Results show that there are six main themes that influence attendance and adherence to cardiac rehabilitation in ethnic minorities. Knowledge, language and communication, and programme accessibility were barriers identified across all the ethnic groups. The results from this review highlight the need for the following changes in the provision of CR services:

- Personal contact should be made with potential participants before they leave hospital to ensure that they are aware of what CR entails and what the benefits are.
- Written information should be available in a range of languages as many ethnic minority populations do not speak or read English.
- Interpreters should be offered when counselling ethnic minority patients. This may not be possible due to limited availability for all sessions, but it is particularly important to ensure that explanations about diagnosis and the associated implications are understood.
- Caution should be utilised when children act as interpreters for their parents. If spouses speak English, they should be used instead as they can also provide support and be involved in the patient's treatment.
- Participants should be allowed to bring along a support figure i.e. family/friend to the earlier sessions to make them feel more comfortable. It will also allow family members to assess the cultural appropriateness of these sessions.
- Single-sex sessions should be arranged for those that wish as mixed-gender classes were one of the major barriers identified by South Asian women.
- Dietary advice should be tailored towards the diet of that ethnic group.

To the author's knowledge, there is only one other study that has examined influences to attendance in ethnic minorities. Although this narrative review by Galdas, Ratner & Oliffe (2011) focused on South Asians, the findings are very similar to this study. Four prominent themes emerged from their identified literature, including exercise, culture and religion, programme access and structure, and communication and language (Galdas et al., 2012).

In researching literature for this review, it became clear that there were many different types of methodological techniques available to synthesize qualitative findings. The meta-ethnography technique was appropriate for this review as common themes were easily identifiable due to the small number of papers. By using refutational synthesis, these themes could then be converged to construct overarching topics that drew together results from all the studies.

### ***2.5.1 Gaps in literature***

Despite studies indicating that uptake of cardiac rehabilitation services is particularly low in ethnic minorities, exact figures across the UK are unknown. A coordinated approach to recording data is needed to accurately assess under-represented populations. There is an extensive range of literature examining influences to attendance and adherence in the general population. However, few studies focus on ethnic minorities and the ones that exist tend to centre on South Asian populations. Studies examining other ethnic minorities are needed to build on existing literature so that the provision of services can be adapted to these patients.

### ***2.5.2 Limitations***

Lack of other authors meant that member checking was not used when identifying papers using the inclusion and exclusion criteria, which could lead to researcher bias. To reduce this risk, the author read through full papers instead of just the title and abstract when uncertain.

## **2.6 Conclusion**

Uptake to cardiac rehabilitation is estimated to be lower in ethnic minority populations. This is significant because certain groups are at a higher risk of CHD, particularly those from South Asia. The decision to participate in cardiac rehabilitation in ethnic minorities is influenced by a complex interaction of social, cultural and practical factors. Healthcare practitioners need to be made aware of these influences so that they can provide culturally sensitive care. In doing so, they will address the barriers to attendance for these populations, such as incorrect health beliefs, cultural differences and gender roles, which could maximize the uptake and adherence to secondary prevention services.

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