



South Asian Migrants' Perception and Experiences of Physical Activity, Exercise and Exercise Therapy: A Scoping Review and Qualitative Analysis

Syed Alamdar Hussain^{1,2} · Eleanor Holroyd¹ · Imran Khan Niazi² · Nada Signal¹

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Abstract

This scoping review explored the perceptions and experiences of South Asian Migrants (SAM) regarding Physical Activity (PA), Exercise, and Exercise Therapy (ET). Existing evidence is disparate and limits a comprehensive understanding of SAM perception and experiences. The review aimed to map the existing literature to better understand various factors that influence participation in exercise-related activities. The systematic search strategy was implemented across eight databases using key search terms. A total of 18, qualitative ($n=15$) and quantitative ($n=3$) studies were included in this review. Reflexive thematic analysis revealed five overarching themes, including: (1) Upholding deep-rooted cultural identities, (2) Influence of religious beliefs in shaping PA, (3) PA across the lifespan, (4) A gateway to holistic well-being, and (5) Pathway to personal empowerment. The review underscored how multiple factors shape SA migrants' perceptions and experiences of PA, exercise, and ET, and highlights the importance of culturally tailored ET approaches to address the needs of SA migrants.

Keywords Physical activity · Exercise · Exercise therapy · South Asia · South Asian migrant · Perception · Experience

Introduction

Globally, South Asia (SA) nations such as Afghanistan, Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan, and Sri Lanka form the majority of migrants (280 million) to high-income nations such as New Zealand (NZ) [1]. In high-income countries such as Canada, the United States of America (USA), the United Kingdom (UK), Australia, and NZ, SA migrants are a significant proportion of the migrant

population [1–7]. In NZ, Indian migrants account for 4.7% of the total population [8] with migrants from other SA countries like Pakistan, Bangladesh, Afghanistan, Nepal, Bhutan, Sri Lanka, and the Maldives making up a further 1% of the population. This rapid growth in SAM has significant public health implications, particularly given the high vulnerability of non-communicable diseases [9].

The global burden of non-communicable diseases, such as heart disease, diabetes, stroke, and hypertension, is rising across both high and low-income countries [1]. This burden is disproportionately higher for migrant communities, including SAM [10, 11]. This trend is driven by a combination of factors, including increasingly sedentary lifestyles and an ageing population [12]. Additional contributors, such as poor dietary habits and tobacco use, further compound these complex patterns of morbidity and mortality worldwide [13]. Physical inactivity, in particular, is a modifiable risk factor associated with a 20% to 30% higher risk of premature death compared to those who are physically active [14]. A substantial body of evidence has shown that regular Physical Activity (PA) is associated with higher levels of cardiorespiratory fitness, enhanced overall health and

✉ Syed Alamdar Hussain
hsm2022@autuni.ac.nz

Eleanor Holroyd
eleanor.holroyd@aut.ac.nz

Imran Khan Niazi
imran.niazi@nzchiro.co.nz

Nada Signal
nada.signal@aut.ac.nz

¹ Auckland University of Technology, Auckland, New Zealand

² New Zealand College of Chiropractic, Auckland, New Zealand

quality of life, and a significantly lower risk of developing many health conditions and effects of ageing [15, 16]. However, decreased PA participation after migration may negatively impact health outcomes [10, 11].

PA, exercise, and exercise therapy (ET) play a vital role in the prevention and management of a wide range of health conditions. These interventions have been shown to improve quality of life, support the function of body systems, including the musculoskeletal, hormonal, respiratory, immunological, and cardiovascular systems, and support the management of conditions such as osteoporosis, heart disease, diabetes mellitus, hypertension, and various forms of cancer [17–19]. Despite the known health benefits, studies show that South Asian Migrants (SAM) face challenges in maintaining the recommended level of PA, which leads to health risks [20, 21]. Barriers to PA and exercise can be categorized into sociocultural and structural. The sociocultural systems of SAM countries of origin, which are founded on strong familial intergenerational, community, and religious support systems [22–24], include barriers like gender roles, cultural norms, and family responsibilities [21, 24]. However, post-migration challenges, such as a change in work type, unfamiliarity with the healthcare system, and language barriers, limited knowledge of the host country's healthcare system, form structural barriers and, in turn, contribute to lower levels of PA and exercise in migrant populations [20, 21, 24–26]. Due to the low PA levels, the physical and mental health of a new migrant deteriorates, termed “The Healthy Migrant Effect” [27–30]. Post-migration challenges have been reported to be significantly higher for female SAMs. Roughly 27% of migrant women report avoiding healthcare due to language barriers, and many also perceive that a male family member must accompany them, while healthcare providers often lack cultural competence, each carrying unique health risks and benefits [31]. At the same time, several facilitators that can increase physical activity participation have also been reported, such as family-inclusive or gender-sensitive interventions, culturally relevant programs, and social and community support [21].

While various streams of research have aimed to determine the levels of PA, exercise, and ET in SAMs as well as their perceptions, experiences, and behaviors around them. However, existing literature deals with narrow areas of interest (including geography, age groups, and gender identities, etc.) and does not fully capture the diversity within this broader community. Furthermore, limited attention has been given to understanding experience related to ET as a component of health management, which limits the comprehensive understanding of how SAM perceives and engages with PA, exercise, and ET across diverse settings. This scoping review aims to map the evidence on perception and experiences of SAMs with PA, exercise, and ET to identify

major influencing elements and develop culturally sensitive interventions.

Method

The study design was informed by the methodological framework proposed by Arksey & O'Malley and refined by Levac et al. [32, 33] and conducted in accordance with the PRISMA-ScR guidelines [34].

Identification of Relevant Studies

A systematic search using identified search terms (refer to Fig. 1) was conducted via EBSCOhost accessed through the university library, including the following databases: MEDLINE, Australia/New Zealand Reference Centre, SocINDEX, Business Source Complete, Communication and Mass Media Complete, SPORTDiscuss, Humanities International Index, and CINAHL. The search strategy was adapted as per the requirements, with appropriate coding and Boolean operators used to increase the search sensitivity (refer to Table 1). Duplicate studies were removed, and references were cross-checked.

Study Selection (Inclusion and Exclusion Criteria)

All the selected studies were assessed against the inclusion and exclusion criteria. All studies in English that explored and reported perceptions and experiences on PA, Exercise, and ET in the adult SAM population were included in the study. The search was limited to the literature published within ten years (2013–2022). All the grey literature and the studies focusing on treatment methods were excluded from the study.

Data Charting

Data from the included studies were extracted using a structured Excel spreadsheet developed specifically for this review, capturing details such as Author (year), Country, study design, Participants and Recruitment Approaches, Aim, Findings, Gap and Recommendation, related to perceptions and experiences of PA and exercise. Studies were categorized based on methodological design (qualitative or quantitative) and grouped by key thematic areas identified during analysis.

Fig. 1 Prisma diagram for study selection

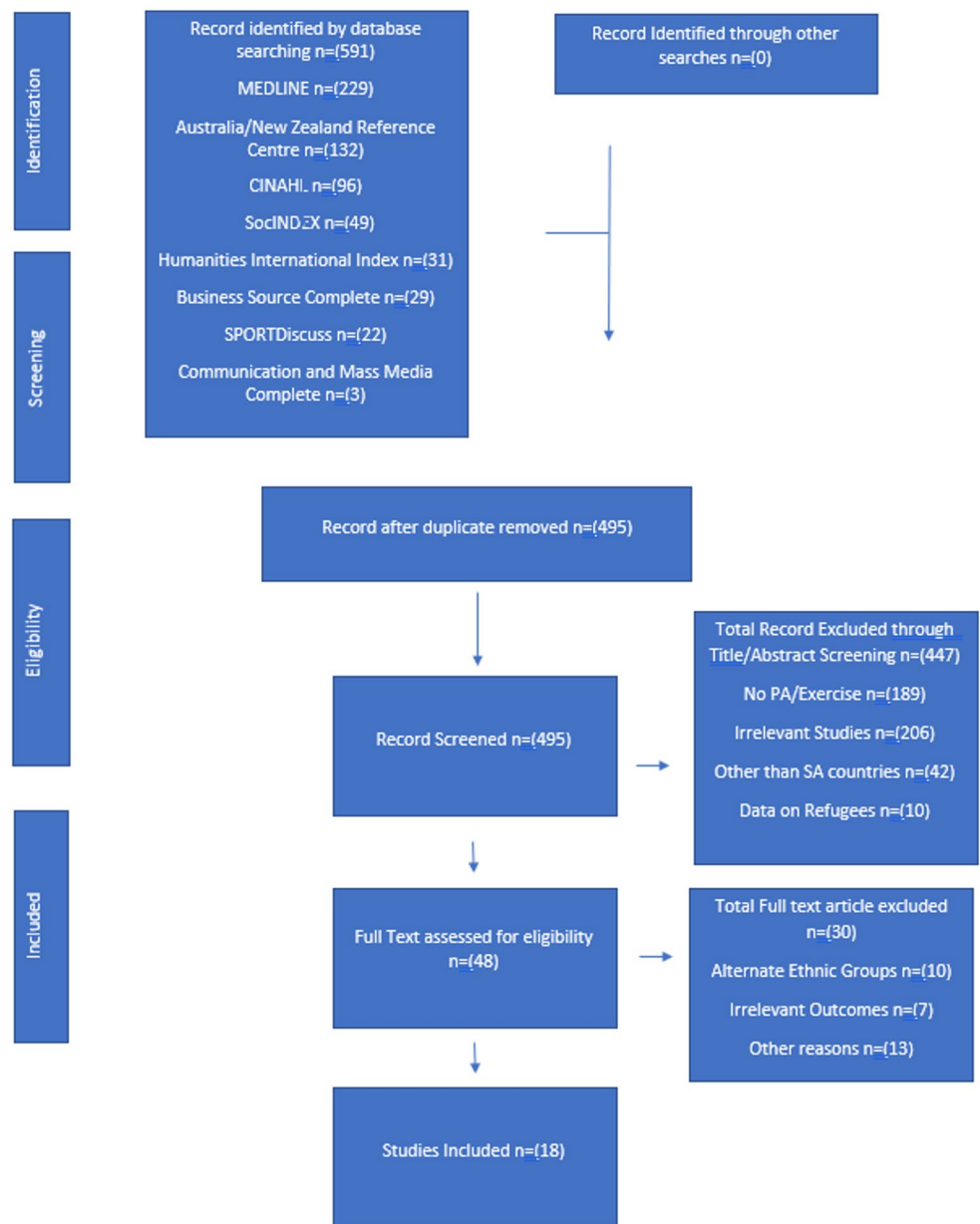


Table 1 Boolean operation for search strategy

Keywords for Search Strategy
(perception or thinking or experience* or attitude* or knowledge or Idea or Belief* or Believe* or perspective or opinion)
AND
(exercise or "Physical Activity" or fitness or "aerobic training" or "strength training" or walk* or "physical exercise" or "exercise therapy" or "exercise rehabilitation" or physiotherapy or "physical therapy" or rehabilitation)
AND
(Migrant* or "undocumented migrant*" or "ethnic minority*" or "first generation migrant*" or "second generation migrant*" or migrant or "newcomer*")
AND
("south asia*" or India* or Pakistan* or Bangladesh* or Afghan* or Bhutan* or "Sri Lanka*" or Maldiv* or Nepal* or "asia*")

Data Analysis

To map the extent and nature of the relevant evidence base, a descriptive quantitative analysis of included articles was undertaken and presented visually in Figs. 2 and 3.

Thematic Analysis

To identify the factors that report the perception and experiences related to PA, exercise, and ET, a qualitative thematic analysis was undertaken [35, 36]. The study followed a pragmatic paradigm that values and encourages the practical knowledge and diverse perspectives to inform understanding of perception and experiences of SAM regarding PA, exercise, and ET. Contributors to the analysis included two physiotherapy researchers (SA, NS) and a medical anthropologist (EH) with expertise in migrant health research, supported by an engineer and health researcher (IKN) with a SA cultural background. This approach acknowledges the researcher's active role in interpreting data with diverse expertise in the field of health research. A thematic analysis was conducted, in which textual data retrieved from both qualitative and quantitative research were analyzed using an inductive method to provide a thorough understanding of South Asian migrants' perceptions and experiences of PA, exercise, and ET. The results were classified into the key themes using a six-phase, reflexive thematic analysis process by Braun and Clarke [37, 38]. This included a familiarization process, involving the reading and identifying the context of the article. Next, from the relevant data, initial codes were generated using an inductive approach. themes,

subthemes, and themes were discussed and cross-checked against the raw data throughout the analysis process, and the report was produced [37]. To facilitate data management, coding, and making themes, NVIVO 12 Pro was used. We did not review the quality of the studies, as it was not our central focus [32, 34].

Results

The database search yielded 591 records. After removing duplicates, 495 remained. Title and abstract screening excluded 449 records, leaving 48 for full-text review. Of these, 28 were excluded due to irrelevant populations, outcomes, or other criteria. Eighteen studies were included in the final synthesis. See Fig. 1 for the PRISMA flow diagram.

Characteristics of the Evidence Base

The 18 included studies comprised both qualitative ($n = 15$) and quantitative ($n = 3$) designs, with a predominant focus on gender, ethnicity, and migrant experiences in Western settings (Table 2). Across the set, nine studies focused specifically on SA women, eight included all genders, and only one study focused exclusively on men. Indian ($n = 10$) and Pakistani ($n = 10$) migrants were the most frequently represented ethnic groups [20, 21, 39–50], followed by Bangladeshi ($n = 4$) [43, 44, 48, 51], Sri Lankan ($n = 2$) [21, 48], Afghan ($n = 1$) [40], Bhutanese ($n = 1$), and Nepalese ($n = 1$) populations [21]. Most studies were conducted in high-income countries, with the UK being the most common

Fig. 2 Visual presentation of included studies by country and study design (qualitative and quantitative)





Fig. 3 Survey shows the distribution of the included studies by year and activity types across the South Asian Migrants population characteristics

setting ($n = 9$), followed by the USA ($n = 4$), and Australia and Canada ($n = 3$ each). Refer to Figs. 2 and 3.

Thematic Analysis of SAMs’ Perception and Experiences of PA, Exercise, and ET

The thematic analysis of included studies revealed five overarching themes: (1) Included upholding deep-rooted cultural identity, (2) Influence of religious beliefs in shaping PA, (3) PA across lifespan, (4) A gateway to holistic well-being, and (5) Pathway to personal empowerment.

Theme 1: Upholding of Deep-rooted Cultural Identity

SAM perceptions and experiences of PA and exercise were deeply shaped by a focus on maintaining their cultural identity. For many, participation in PA was influenced by the desire for cultural values, heritage, and traditions, which were important for preserving a sense of belonging and continuity within their communities. Two main sub-themes emerged from this overarching theme: cultural conservatism and gender norms.

Table 2 Characteristics of Included Studies

S.no	Author (year)	Country	Study Design	Study Population	Aim	Findings	Gap/ Recommendations
1.	Salma, 2020	Canada	Qualitative Research, Community-Based Participatory Research	Muslim Older Migrants (SA, African, Arabs) <i>N</i> =68 (Mixed Gender, Not specified)	To explore experiences and perceptions of PA among older Muslim migrants.	PA influenced by health limitations, cultural/religious norms, and environmental barriers (safety, access).	Further understanding of older migrant populations is particularly important to support the development of appropriate PA programs.
2.	Fernandes, 2021	Australia	Qualitative Research, Exploratory Qualitative Approach	Indian Migrants <i>n</i> =21 (10 male, 11 female)	To explore how PA and sedentary behaviour are defined among Indian migrants in Melbourne, Australia.	PA understood holistically (mind-body-social); gender roles strongly shaped perceptions.	More understanding is required to explore PA among Indians, and particularly different subgroups
3.	Vyas, 2013	USA	Quantitative Study, Cross-Sectional Survey	SA Community <i>n</i> =709 (Mixed gender, not specified)	To assess health needs, including PA and healthcare access for SAM.	Low PA levels (only 29% meeting guidelines); disparities linked to acculturation and access.	Limited data on the health issues of SAM needs further research and targeted intervention
4.	Horne, 2018	UK	Quantitative Study, Cross-Sectional Survey	SAMs <i>n</i> =138 (Mixed Gender, Not specified)	To examine socio-cognitive factors influencing intention for PA in British SA adults.	Attitudes, subjective norms, and beliefs significantly influence PA intention.	Need for culturally tailored intervention based on subgroup differences
5.	Bhatnagar, 2021	UK	Qualitative Research,	SA Women Migrants <i>n</i> =28 (Second generation <i>n</i> =18, first generation <i>n</i> =9)	To explore barriers and facilitators to PA in second-generation British Indian women	Barriers include safety, appearance concerns, and social norms; facilitators include media and religion.	Need for generation-specific research, distinguishing first vs. second generation.
6.	Daniel, 2017a	USA	Qualitative Study.	SA Indian Women <i>n</i> =40	To explore barriers and motives for PA for SA Indian women migrants	Barriers include role expectations and lack of support; motivation is linked to health and social factors.	Evaluation of culturally sensitive factors influencing SA women's participation in PA
7.	Nisar, 2022	Australia	Qualitative Research	Adult SAMs <i>n</i> =29 (18 female, 11 male)	To explore health behaviours and healthcare access among SAM in Australia.	PA is influenced by cultural beliefs, cost, work stress, and social environment.	Need for culturally appropriate and accessible health intervention addressing language, financial, and social behaviours.
8.	Gany, 2013	USA	Qualitative Research	SA Male Taxi Drivers <i>n</i> =31,	To explore knowledge, attitudes, and beliefs about CVD risk in SA Taxi drivers	High perceived risk due to sedentary work, stress, poor diet, and low PA.	Need for multi-level interventions for the individual and environment
9.	Iqbal, 2022	UK	Qualitative study, Exploratory Research	SAM British Pakistani Women <i>n</i> =23,	To explore obesity-related concerns and behaviours in British Pakistani women.	Cultural norms, gender roles, and a lack of culturally appropriate resources influenced PA and diet.	Need for culturally informed and tailored intervention, particularly addressing cultural beliefs
10.	Dave, 2013	USA	Qualitative Research, community-based participatory research	SAM Women <i>n</i> =42	To explore PA across different life stages in SA women.	PA declines after marriage/children; influenced by socio-cultural norms and family expectations.	Need for culturally and lifestyle-appropriate intervention

Table 2 (continued)

S.no	Author (year)	Country	Study Design	Study Population	Aim	Findings	Gap/ Recommendations
11.	Penn, 2014	UK	Qualitative Research, Theory Domain Framework	SAM T2D Pakistani Women $n=20$	To explore behaviour, change in a culturally adapted intervention in UK Pakistani women.	Social support, inclusion, and culturally tailored programs improved engagement.	Need for further exploration of intervention effectiveness for long-term outcomes.
12.	Pullia, 2022	Australia	Qualitative Research, community-based participatory research	SAM Women $n=16$,	To explore experiences, beliefs, and barriers to PA in SA women in Western Australia.	Barriers include a lack of knowledge, cultural norms, and competing priorities	Development of an intervention informed by cultural beliefs, barriers, and attitudes.
13.	Rathanaswami, 2016	Canada	Qualitative Research, Interpretive Descriptive design	SAM women $n=8$,	To explore PA experiences, barriers, and facilitators in SA Women living in Canada	Barriers include family roles, cost, and environment; facilitators include group support and women-only spaces.	Consideration of multi-level influences to improve PA participation
14.	Bharmal, 2016	USA	Quantitative research, Community-based prospective cohort	SAM community $n=906$ (mixed gender)	To examine the association between religion and obesity, SA living in America,	Religious affiliation linked to obesity; PA had a minimal mediating effect.	Need for culturally tailored interventions to address obesity and lifestyle
15.	Lansburgh, 2022	UK	Qualitative Research, intersectionality approach	SAM Pakistani Women $n=6$ Non-Pakistani. None SA Key Informants $n=4$,	To explore perceptions, barriers, and facilitators of PA in Pakistani women living in Raval, Barcelona.	Barriers include gender roles, migration stress, and a lack of women-only spaces.	Need for policies and culturally tailored programs for migrants
16.	Riley, 2016	USA	Qualitative Research, Community-based.	SAM Bangladeshi migrants $n=67$, (63% male, 37% female)	To explore PA and weight management behaviours among Bangladeshi in New York.	Cultural norms, modesty, and gender differences influenced PA participation.	Development of a culturally tailored intervention for migrants
17.	Mahmood, 2022	Canada	Qualitative Research,	SA Migrants $n=22$ (mixed gender, not specified)	To explore factors influencing low PA levels among SAM in Vancouver, Canada.	Cultural norms, migration-related changes, and family priorities reduced PA.	Consideration of social, cultural, and structural context influencing PA behaviours
18.	Ratna, 2017	UK	Qualitative Research, Multi-Method Approach	Gujrati Indian Couple $n=10$.	Aim: To explore leisure walking and identity of Gujarati Indian Migrants.	Walking is linked to identity, belonging, and trans local experiences.	Underrepresentation of older migrant and women's experiences

Cultural Conservatism

Cultural conservatism within SAM is deeply rooted in various structures and practices passed down through generations, shaping not only cultural identity but also their health behaviors. Cultural conservatism had a considerable influence on PA, particularly for women, as seen through the need to adhere to cultural and religious norms [21, 46]. These often dictate gender interactions, dress codes, medical encounters, social inclusion or exclusion, and societal expectations, which create barriers to engaging in PA. For example, among this SAM, exercise was not typically part of daily life, leading to a notable absence of PA [52]. This

was highlighted by one of the studies in which the participant stated:

“They’re not used to that, where you come and sit with your bare chest, pumping iron...Our people are very reserved. Those changes, they are not used to it” (Participant 16, older man).

This underscores the deep-rooted cultural reservations that limit the adoption of new lifestyle habits on settlement, such as those practiced in the host country.

The literature has also discussed that in many traditional cultures, respect for older adults, as a fundamental virtue often termed ‘filial piety’, is a critical element of SAM culture which shapes PA in activities of daily life (ADL),

My mom who is 86 years old, she would do work and all of us would get angry—the 6 of us—the 3 brothers and the 3 wives This is why she did work.

This illustrates a multifaceted relationship between a younger generation's respect for and concern for the well-being of the older adult. SAM has a strong cultural norm of respect and service to elders, particularly parents, which frequently results in adult children feeling obligated to care for and protect their elders.

The link between SAs' cultural and religious affiliation and obesity is partly explained by traditional cultural beliefs, which shape dietary and physical activity habits. The MASALA study identified three major dietary patterns: [1] animal protein, [2] fried snacks, sweets, and high-fat dairy, and [3] fruits, vegetables, nuts, and legumes. Recent migrants (less than 20 years) tended to adhere to traditional foods, favoring the fried snacks/sweets/dairy pattern, while long-term residents shifted toward Western habits, consuming more animal protein. This illustrates how cultural identity, expressed through attitudes and customs, directly guides health behaviors and underscores the importance of culturally tailored interventions [53].

Gender Norms

Adherence to proscribed gender norms is deeply ingrained in SAM, influencing migrants' health behaviors, expectations, and responsibilities. In the family, these norms frequently prescribe specific roles to men and women, resulting in unequal gendered divisions of responsibilities and sacrifices. Traditionally, SAM women have been expected to prioritize caring for their homeland family, while men are usually seen as the main breadwinners. This shapes how PA and exercise are viewed and accessed. Public spaces are externally sectioned and align with men's socially recognized roles, whereas women, as caregivers, may be limited in participating in public forms of exercise.

In traditional SAM culture, the concept of patriarchy is frequently discussed in the literature as a system where male roles are ascribed significant authority, influencing family dynamics and social expectations [48]. Men are typically seen as the heads of households, responsible for major decisions and roles. This patriarchal structure can profoundly impact the lives of SAM women, shaping their autonomy and daily activities. For example, women may need to seek male permission to engage in PA and exercise, and may face societal pressures that dictate their health behavior and beliefs. Such cultural norms highlight how gender roles are enforced and maintained within these communities [20].

So over here, you are so old now, have seen everything, but still, we must ask our husbands for everything and support them. That is a habit now that was developed then.

This reflects how these norms are ingrained from the very beginning and persist throughout life. Current research highlights the impact of familial norms and expectations on the roles and conduct of SAM women in their homes. Family responsibilities and cultural norms frequently place a higher priority on caring for others and taking care of the home than on their own well-being and leisure activities, such as exercise [46]. This is captured in the following quote.

"I work for my mother-in-law, my kids, and my husband" (a 45-year-old woman).

This quote conveys the deeply held belief that SAM women's primary responsibilities are to serve their families at the expense of their interests and well-being.

Theme 2: Influence of Religious Beliefs in Shaping Physical Activity

Religion has a significant impact on a population's health-seeking behavior, and this was particularly apparent in the SAM community [40, 47, 51]. The interaction between religious beliefs and daily practices frequently extended to aspects of physical health, such as PA, exercise, and ET. This relationship has been a fascinating topic in academic literature, highlighting how religious values and practices affect PA.

Impact of Religion on PA

Religious beliefs deeply shape attitudes toward PA and exercise. Across faiths, spiritual practices often integrate health through specific activities or by broadly promoting lifestyles aligned with religious teachings [39, 51]. These practices reflect the values of each faith and illustrate how religious involvement can shape attitudes toward physical well-being. This review illustrates how religion intersects with PA, influencing beliefs about exercise and PA.

For many SAM migrants, daily prayers (Namaz) with bowing, standing, kneeling, and prostrating are considered exercise. Walking to the mosque multiple times a day is also seen as an adequate activity. Fasting, likewise, is viewed as a health-enhancing religious duty [51]. One male respondent emphasized this viewpoint, stating:

God gave us [this] system of prayer to keep us well,

This reinforces the belief that these ritual postures can help maintain well-being. Furthermore, prayers and fasting are

frequently associated with stress relief and mental peace, which promotes overall health.

Religious norms play a significant role in shaping how SAM engages with PA, exercise, and ET. For many Muslim women, Islamic teachings on modesty and gender interaction encourage preferences for women-only exercise facilities or for home-based activities that align with religious expectations of privacy [45, 51]. Additionally, some individuals avoid facilities that play music, as it may be viewed as inconsistent with their interpretation of Islamic guidelines [45]. One female respondent stated:

I have been to exercise classes before, but they had music on, so I felt bad that I left in the middle of it didn't go back again.

These religious considerations not only influence the type and location of PA and Exercise but can also affect decisions to participate in structured exercise therapy programs, particularly when culturally and religiously appropriate options are limited. Religious and cultural affiliations can have a significant impact on PA, particularly through community engagement rather than direct religious teachings [39]. For example, membership in cultural or religious organizations can promote PA and sports participation [39]. A participant recounted,

We were part of a Hindu group... this group actually encouraged us to actually participate in sport, ... you know, fun runs.

This demonstrates how such groups can create a supportive environment for exercise, emphasizing the importance of community involvement in promoting PA in alignment with their faith because shared religious values foster mutual understanding and respect for each other.

Theme 3: Physical Activity and Exercise across Lifespan

Exercise and PA levels vary with lifespan in SAM. This theme explores how perceptions of exercise and PA differ between generations and evolve with age, and how these factors impact the health behaviors of the SAM. Data suggests that intergenerational attitudes toward exercise are influenced by ethnicity and cultural norms, as demonstrated by the differences in PA intention among older adult migrants from SA [21, 46]. Two main subthemes were identified: "Pain and Aging" and "Intergenerational Differences."

Pain and Aging

The interplay between aging, pain, and engagement with PA, exercise, and ET was a recurrent theme across studies. Many older adults described how chronic or intermittent pain, often attributed to age-related conditions or muscle strains, shaped their perceptions of exercise as potentially aggravating rather than alleviating their discomfort [20, 40, 45]. This perception frequently led to a cautious or avoidant approach toward PA and structured exercise programs. Participants articulated concerns about exacerbating existing pain, which influenced their willingness to engage in recommended exercise therapy. One female participant from a study conducted in Canada gave this some thought and said: [20].

No- now at this time, ladies my age- they are like now we have blood pressure, our knees hurt, now we have this ... Now there is nothing they do.

This quotation emphasizes how age-related health problems can result in less PA and an increased need for assistance with everyday duties. Additionally, another Indian migrant living in Canada [20] stated:

...I have friends. Wahi Guru—we are all sitting here—one walks with a er. what you call it ...wheelchair [walker] . My knees have just now started hurting a little. But it is Gurus blessing otherwise I am fine.

This highlights how PA becomes more difficult due to the health-related deterioration due to aging. The experiences of older Muslim migrants in the studies [20, 40] suggest that PA and exercise were acknowledged to be severely limited in older adults due to aging and the resulting rise in chronic pain [40]. Important cultural and religious rituals, which are regarded as a type of exercise, as was mentioned in earlier themes, are also limited by pain, as one of the participants stated:

I have pain everywhere... I have an alarm at 4 am for prayers... I feel ashamed... this pain is stopping me from my prayers.

Movements like those involved in daily prayers were seen by participants as overall PA. Chronic pain, however, makes these activities more challenging to carry out, which further reduces older adults' chances of maintaining their physical health and well-being.

Intergenerational Differences

The perspectives and experiences of SAM regarding PA and exercise are further shaped by intergenerational experiences and expectations. These variations result from early life experiences, generational norms, and the changing perceptions of PA among age groups [49]. These opinions appear to be influenced by the age and extent of integration into the host society, especially among younger migrants, in high-resource nations like NZ, where exercise across the lifespan is more widely promoted and accepted. Regular exercise is seen by many younger migrant women as crucial for maintaining their fitness levels as well as for fitting in with the social mores of their new surroundings [46]. One participant remarked, for example:

I have to fit in this dress and look good. I started gaining weight, so I started working out just for my sake, you know so I can start losing weight.

This demonstrates how younger migrants may become accustomed to and embrace the host society's outwardly visible exercise habits as their settlement journey. However, older women, according to the study, are more likely to believe that maintaining overall health can be achieved through exercise and daily routines [46].

Exercise is good for your body.

"Exercise is a branch in your life, like daily routine. We do exercise because we have to keep fit" (60 years).

Older migrant Muslim women tended to prioritize longevity and health, whereas younger women are motivated primarily by aesthetic goals. First-generation SA women's views on PA and exercise are influenced by their early childhood experiences [48]. Numerous research participants reported that they were not exposed to sports or PA as children [48]. One participant thought,

... it's maybe because that we are not used to it during our childhood.

Due to their early lack of exercise exposure, first-generation migrants find it difficult to incorporate PA and exercise into their adult lives. When these habits are not formed early in life, it can be difficult to establish and stick to a regular exercise schedule as you get older. One of the study's results showed generational and acculturation differences; second-generation SAM in the US were more likely to exercise as compared to the first generation [54].

Theme 4: A Gateway to Holistic Well-being

This highlights a key theme demonstrating that PA, exercise, and ET are seen by SAM as gateways to holistic well-being. The motivation for engaging in PA is not limited to preserving physical health; SAM participants noted that PA and exercise had a significant impact on mental and emotional well-being and social facets of life. The theme was supported by several subthemes: exercise, an integrated health approach, and a source of social engagement [21].

Exercise as an Integrated Approach to Health

This sub-theme examines the various interconnected benefits that exercise is seen to bring to the lives of SAM. In this context, PA and exercise are perceived as an integrated approach to holistic health, influencing multiple dimensions of life. For many SAMs, ADLs and exercises serve as a means of maintaining not only physical fitness but also fostering social engagement, mental well-being, emotional stability, and spiritual well-being [21, 40, 47, 52].

Along with its benefits to physical health, PA was acknowledged to have mental health benefits [41]. Exercise is a form of sports that is viewed by many SAM as a means of improving mental clarity, reducing stress, and fostering emotional well-being [41]. One participant shared:

For me, it's getting your mind off the regular stuff you do... giving your mind a break from the regular day-to-day tasks and activity, that's PA for me.

This viewpoint emphasizes how exercise can support mental wellbeing, allowing people to refocus their minds and engage in activities unrelated to their work and life challenges.

Enhancing emotional and social well-being is often linked to PA and exercise, especially for SAM. Staying active is important for emotional and social well-being and physical health, according to older adults [40]. One study participant highlighted that [40]; Because of the perceived physical, emotional, and social benefits, maintaining an active lifestyle into old age was essential to healthy aging.

I want to grow old gracefully. I want to grow old energetically . you would not feel as old as you are.

This demonstrates how exercise promotes a sense of fulfillment, reduces feelings of isolation, and helps manage stress, all of which have a major positive impact on emotional health. Exercise has been linked to both physical and social advantages, including increased joint mobility, weight loss, and the development of social bonds. These results are

consistent with the holistic view of health, which holds that in SA communities, PA is a means of achieving greater general well-being [54].

Source of Social Engagement

Exercise and PA were described in some study findings as excellent means of fostering social interaction. The desire for social interaction may be the primary source of motivation, even though participation in group activities like yoga classes, walking clubs, and community sports also results in staying active [50].

The integration of social engagement with PA and exercise highlights the dual benefit of improving health while enhancing social cohesion and community interaction, which is especially important for older populations experiencing social isolation [40]. The focus group comment:

“We have gym and programs in the Multicultural center, we can go there but we don’t go. When we come here, we get to socialize and exercise, all in one outing” (Older women, Focus Group 9).

The above statement highlights the importance of exercise and PA for the social welfare of older Muslims, especially those who are migrants. Participation in group-based PA contributes to physical and emotional well-being and serves as a vital tool for fostering social connections and alleviating isolation. The social aspect, such as group activities, shared interests, and a sense of community belonging, plays a crucial role in shaping perceptions towards exercise.

SA women are often motivated to exercise by shared interests, such as a desire to reconnect with their cultural heritage through traditional practices like dance (e.g., Bollywood or classical forms), or by concerns related to body image [21, 47]. These common interests, whether cultural or health-related, play a significant role in encouraging PA and exercise within this community [47]. During exercise sessions, for instance, Bollywood music was mentioned as a unifying factor that appealed to both SA and English women, fostering a shared enjoyment of culture [47]. One participant said, highlighting this connection.

I’ve been recommending it to lots of Asians [and] English ladies, because they [all] like Bollywood music, don’t they?

This exemplifies how shared interests can reduce cultural barriers and promote PA and exercise among groups. One participant emphasized the importance of community involvement in motivating older women to participate in activities [47]:

I think [they are] helping our Asian community ladies, especially the oldies to come out [of the house]... They give her [the trainer] blessing.

A friendly atmosphere is created by this sense of belonging, which is fostered by familiar social norms and community support, and it encourages regular participation.

Theme 5: Pathway to Personal Empowerment

PA and exercise often serve as more than just a means to improve health for SAM; they represent a powerful source of personal empowerment. They are deeply intertwined with personal empowerment and social identity. Empowerment refers to gaining confidence, autonomy, and a sense of control over one’s physical body and broader life circumstances. For many, regular participation in PA fosters a sense of achievement and self-sufficiency and symbolizes affluence and modernity [46, 47], especially within a new country, where adopting an active lifestyle is associated with having the time and resources to focus on personal health [46, 47]. This role of PA, exercise and ET as a tool for holistic wellness and a marker of social standing empowers individuals, fostering a greater sense of control over their well-being and lifestyle.

Sense of Achievement and Confidence Building

Among SAM; PA, and exercise are regarded as important factors in fostering a sense of accomplishment and sufficiency. SAMs take great satisfaction in their physical exertions and the positive impacts these efforts have on their self-esteem and general wellbeing, with the words:

Trust me when I do work out I’ll be drenched...but it’s like built your confidence.

One woman emphasized her feeling of success. Their comfort and sense of self-sufficiency were also enhanced by the sense of accomplishment they felt from gradually mastering PA, and their confidence increased with continued engagement [47]. Another woman highlighted the way exercises promote self-awareness and understanding of one’s own capacity, saying:

That’s what they teach you, ‘listen to your own body’, whatever your body allows you go to that speed and level.

These statements highlight the positive effects of exercise on self-esteem and self-efficacy, supporting the notion that these migrant women felt more in control of their physical

health. The fact that 29% of participants exercised regularly is evidence of the potential to encourage SAs to embrace PA as a way to take control of their health [54]. Strong positive attitudes and subjective norms around PA and exercise point to a social reinforcement mechanism that could be used to promote empowerment through group support and common objectives [55].

Discussion

The scoping review delves into the perception and experiences of the SAM regarding PA, exercise, and ET. By shedding light on it, the review aims to inform the cultural adaptation of the ET intervention tailored to SAM. Most of the included studies reviewed employed qualitative methodology, capturing the experiences through IDI and FGD. The findings revealed deeply interconnected themes, which included upholding deep-rooted cultural identity, the influence of religious beliefs in shaping PA across the lifespan, a gateway to holistic well-being, and a pathway to personal empowerment. Together, these five themes collectively provide a comprehensive understanding of the factors involved in shaping PA and exercise behavior within the SAM community.

SAM perceives PA and exercise as an important component for their holistic well-being, around mental, emotional, physical, and social dimensions. Older adults emphasized the benefit of PA for emotional connectedness and social well-being. Overall, SAM highlighted the benefits of PA for mental health, such as stress reduction, mental clarity, and emotional stability. This mirrors the previous literature on the migrant population, which highlights the benefit of social support, i.e., through family, friends, and the general community, in shaping the willingness to engage in PA [56, 57]. SAM in the current review showed significant differences in perceptions and attitudes toward the PA level and exercise between the older and younger generations. Yoga or walking clubs; these group-based activities were identified as significant sources of cultural connection and social engagement, reaffirming current literature that underlines the role of social interaction in the promotion of PA participation [50, 58, 59]. These findings indicate that PA is not only perceived as an isolated health behavior, but rather as a socially embedded practice that contributes to overall well-being.

Building on this, cultural identity strongly shapes migrants' perceptions of health and well-being. For SAMs, PA and exercise are often seen within broader social and psychological contexts rather than as isolated health behaviors. Literature describes this as a "balancing act," where SAMs navigate socio-cultural expectations alongside

health goals [60]. This underscores the need to frame PA as a socially endorsed, rather than solely individual, pursuit. Coping strategies also play a critical role, influencing emotional, social, and psychological well-being [61]. Migrants who adopt adaptive strategies such as seeking community support, engaging in culturally familiar PA, or participating in group activities tend to report better mental health outcomes. Understanding the link between physical and mental health is essential for designing culturally relevant interventions. Programs that incorporate social support, encourage PA, and address emotional barriers are more likely to enhance community engagement with ET [61]. Stress-coping acculturation models further highlight PA as a positive coping mechanism, supporting sustained participation and well-being [61]. By leveraging these insights, community organizations can use cultural and religious frameworks to promote PA, exercise, and ET among SAMs. This highlights how embedding PA within a cultural context can enhance the acceptability and engagement.

Despite perceived benefits, several barriers were identified among SAM towards PA, reflecting the broader challenges experienced by culturally diverse populations. Cultural norms associated with gender roles significantly put limitations on women in PA. Existing literature identifies similar traits for women with modesty concerns, family commitments, and culturally ascribed responsibilities in both migrant and non-migrant women's sports and exercise participation [62, 63]. Family responsibility has been identified as a key psychosocial barrier for migrant women to participate in and sustain the PA and exercise programs [64]. Societal norms place women in the role of primary caregivers, which limits their time and freedom to practice PA [60]. These barriers align with the social role theory [65] stating that the cultural norms that prioritize family responsibility over personal health significantly influence women's health and their engagement in PA.

SAM highlighted social support as a facilitator of engagement in PA and exercise. Positive social norms surrounding PA encourage empowerment by fostering a sense of community and common goals. Social networks between communities and families were instrumental in encouraging exercise, and PA migrants globally have emphasized the risk of social cohesion in sustaining engagement with PA [66]. Cultural adaptation through culturally tailored interventions appears crucial for providing an opportunity for engagement in PA, exercise, and ET. Culturally sensitive materials, bilingual instructions, and inclusive programs for migrants can improve their participation in PA and exercise, and their effectiveness [67].

The extent of acculturation was evident in shaping the perception towards the PA, exercise, and ET. The second-generation migrants were more directed and inclined

towards the PA and exercise norms in the host society as compared to the first-generation migrants. This aligns with the “healthy migrant effect,” which explains how acculturation difficulties cause health behaviors, such as incidental PA, to decline after the migration [68]. According to a review study, migrants frequently mentioned the need to balance an increase in purposeful, structured PA like sport and exercise with a decrease in incidental activities brought on by Australia’s more sedentary lifestyle [69]. According to Yang & Hwang in their theoretical framework, a longer stay in a host country is associated with higher utilization of mainstream health services [70]. However, other studies highlight that some migrants gradually embrace new health behaviors, while others maintain strong cultural ties, which serve as an obstacle [60, 61]. Migrants may be less likely to participate in PA and exercise if it is thought to be stressful due to being unfamiliar, culturally inappropriate, or time-consuming [61]. However, promoting PA, exercise, and ET in a culturally and socially appropriate way, for example, gender-sensitive, group-based programs and family inclusion, can also encourage and lead to increased participation in PA and exercise, calling attention to the complex relationship between acculturation and PA engagement [56, 61].

Strengths and Limitations

This review has several strengths and limitations; the researcher’s positionality emerged as a strength of this study, which enabled a better and deeper understanding of the cultural nuances, barriers, and values of SAM. Another potential strength of the studies is that the review provides a global understanding of the perceptions and experiences of SAM. The study has included both qualitative and quantitative studies, enriching the analysis and acceptability across both types of studies. Debriefing and involving the supervisors throughout the analysis process enhances its objectivity and validity. The study findings contribute to directing practice and policies for public health researchers by offering evidence-based recommendations on culturally acceptable and sensitive interventions, emphasizing community engagement strategies and public health initiatives for the promotion and improvement of PA, exercise, and ET participation among SAM. However, there may exist potential selection bias of studies as a limitation, for example, the scoping review included 18 total studies, out of which only 3 were quantitative, while others were qualitative studies. They may have led to the over-representation of certain types of data. Moreover, the exclusion of non-English studies may have resulted in missing out on some valuable information from the literature. This review included studies from different regions, differences in migration policies, sociocultural environment, and healthcare systems may

limit the applicability of our findings to a specific context. Another possible limitation of the study is it may under-represent some ethnicities of SAs: Nepalese, Bangladeshi, Maldivians, and Bhutanese. Furthermore, it is challenging to generalize the results to all subgroups within this population due to the heterogeneity of SAM communities, which includes differences in cultural backgrounds, socio-economic statuses, and migration experiences. Another potential limitation of the study could be the researcher’s positionality, which might introduce unconscious bias during interpretation and analysis. However, this was actively addressed through the researcher’s engagement in critical reflexivity and peer debriefing to ensure objective and balanced findings.

Conclusion

This study emphasizes how important culture, religion, age, generation, and a sense of empowerment, identity, and well-being are in determining PA, exercise, and ET behaviors among SAM. The findings of the scoping review highlight the need for culturally acceptable approaches for SAM, which would promote engagement in PA, exercise, and ET. Healthcare providers can play a significant role by moving beyond cultural competence, acquiring knowledge of different cultural practices to promote cultural safety, and providing a better understanding of the benefits of PA, exercise, and ET to SAM. Importantly, this review also underscores a notable gap in the literature regarding ET: while general PA and exercise have been explored, there is limited research specifically examining SAM perceptions and experiences of structured, professionally recommended ET interventions. Additionally, much of the existing discussion around exercise as a pathway to personal empowerment has focused predominantly on women, with little attention to how men or different generations experience empowerment through PA, exercise, or ET. This highlights the need for future research to explore gendered and generational differences in these processes. Future research is recommended to emphasize culturally sensitive approaches such as culturally embedded exercise programs and faith-based wellness initiatives, or more of such strategies for the cultural adaptation of PA, exercise, and ET. To foster greater engagement and participation, future researchers should also explore how SAM perceives culturally safe healthcare interactions and the impact this has on their participation in ET and rehabilitation programs. We can establish more efficient and inclusive pathways to well-being for SAM by incorporating cultural sensitivity and safety into health promotion strategies.

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Declarations

Competing interests The authors declare no competing interests.

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