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Sociocultural determinants of health-associated quality of life among Afghan refugees in Pakistan: evidence from a multi-stage cross-sectional study

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Abstract

Background In the past few decades, there has been a significant increase in the number of refugees worldwide. Every individual deserves access to the fundamental right to health, and migration can have a substantial beneficial or detrimental effect on one's health. Foreign invasions and political instability in Afghanistan affected neighboring countries with the large influx of refugees. Discrepancies in quality of life between the host and refugee populations may lead to health inequalities. Investigations in Pakistan on the quality of life of Afghan refugees were scarce despite more than four decades of refugee status. Therefore, this study was initiated to assess the sociocultural determinants influencing health-associated quality of life among Afghan refugees in Pakistan.

Methods The Punjab province and Khyber Pakhtunkhwa province refugee populations were selected as the study population for cross-sectional research based on the inclusion criteria of majority refugee representation and female participation. Quantitative research methodology with pre-validated WHOQOL-BREF questionnaires was used for data collection via multi-stage probability sampling techniques. We collected data from 1,185 study participants and applied univariate and bivariate analyses. Inferential analyses included independent t-tests and ANOVA.

Results The average scores for the entire sample of Afghan refugees were highest for the social domain (58.78 ± 22.74), followed by the physical domain (53.29 ± 19.46), the general health domain (50.44 ± 20.10), the environmental domain (48.43 ± 16.30), and the psychological domain (46.52 ± 14.78). Age, marital status, family setup, mother language, number of years in the host country, residence type, family monthly income, access to health care, current health status, chronic health illness, substance abuse (smoking), cultural compatibility, linguistic barriers, and social inclusion were non-significant with all the subdomains in the inferential analysis using the independent t-test and analysis of variance.

Conclusion The Afghan refugees' average scores across all health-associated quality-of-life domains were lower than Pakistan's host population and the standard cutoff criteria (< 60 indicates poor quality of life). The development of a

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national policy to include refugees in health insurance programs seems essential to improve the health-associated quality of life among Afghan refugees in Pakistan.

Keywords Refugees, Quality of life, Host population, Health inequalities, Determinants

Background

Foreign invasions and political instability in Afghanistan affected the neighboring countries with the large influx of refugees. Pakistan served as a host for more than 1.4 million Afghan refugees in the last 44 years. Conflict is recognized as a health threat and refugees' health remains dependent on living standards and health care access in the host countries. Every human deserves a basic right to health as advocated by the 1946 constitution of the World Health Organization (WHO) [1]. Healthcare services need to be accessible, affordable, and available to everyone, regardless of their race, gender, religion, residency, socioeconomic status, and political affiliation to attain this right. Refugees usually belong to the most vulnerable cluster in the host nations, as the fear of migration to an unfamiliar environment with an unpredictable quality of life leads to diverse health issues. It is recommended that refugees undergo initial screening upon arrival and ongoing disease surveillance following resettlement to determine their health status and need for requisite support [2, 3].

Refugees are more susceptible to certain diseases due to a lack of awareness about the health care system, health perspectives, cultural similarities, poor hygiene, and food insecurity in the host countries. The WHO describes the quality of life as the people's perception of their position in life in the cultural background of the value system that they inhabit about their aim in life [4]. Health-associated quality of life ascertains well-being experienced over time by an individual or society by taking into account the positive and negative attributes of life. Health and illness are taken into consideration together for life satisfaction to measure the quality of life [5]. Life satisfaction as an indicator of the quality of life includes physical well-being, psychological well-being, educational achievements, employment status, monthly income, food security, freedom of religion, and enabling environment to contribute to society [6, 7].

Health-associated quality of life is a multifaceted term that concentrates on the five key health domains of general, physical, social, mental, and environmental health [4]. Physical health is essential for overall well-being and can be modified by altering dietary habits, physical activity levels, sleeping patterns, working schedules, medical supplements, and behavioral patterns [8, 9]. Psychological well-being refers to inter- and intra-individual levels of positive functioning that can include one's relatedness with others and self-referent attitudes of one's sense of mastery and personal growth. Strong social relationships are linked to lower stress levels, a good immune system, early recovery from illness, higher self-esteem, and longer lifespans [10, 11]. Environmental health promotes human well-being and encourages safe and secure societies by focusing on the interactions between people and their environment [12, 13].

Investigations in Pakistan on the quality of life of Afghan refugees were scarce despite more than four decades of refugee status in the host country. Quality of life differences between the host population and the refugee population may lead to health inequalities [14]. Global public health policy's main purpose is to eliminate monetary restrictions and health disparities in the hosting states to increase life expectancy and quality of life among refugees [15]. Universal access to health care must exist in the host nation to achieve Sustainable Development Goal 3. Therefore, this investigation was initiated to assess the sociocultural determinants that influence health-associated quality of life among Afghan refugees in Pakistan. Sociocultural determinants include individual factors (age, gender, and mother language), lifestyle factors (socioeconomic, cultural, linguistic barriers and substance abuse), living conditions (access to clean water, sanitation, and housing), working conditions (access to work, job), social and community factors (existence of discrimination. social inclusion) and governance (documentation and social support).

Methods

A detailed study protocol has been published previously [3]. In the following, we summarize the most important methodological aspects of this study.

Target population selection and sample calculation

The initial sampling frame was constituted to add representative samples from all the refugee hosting regions but was later modified based on the outcome of the pilot investigation. Punjab province and Khyber Pakhtunkhwa province refugee population was selected as the target population for cross-sectional research. Province inclusion criteria were based on the majority population and female participation. Multi-stage probability sampling techniques were applied to collect information. First-stage sampling identified target districts (cluster-wise). Board Tajabad, the Afghan colony, the camps of Khazana and Shamshato from Peshawar district, the camps of Jalala from Mardan district, the camps of Panian and Basu Mera from Haripur district, the camps of Akora Khattak and Jalozai from Nowshera district, and the

camps of Kot Chandana from Mianwali district were the regions that permitted female gender participation. A proportionate random sampling technique was adopted in the second stage to calculate the sample size from selected areas. The third stage of systematic random sampling was applied to fill the questionnaires from target refugees. Commissionerate for the Afghan Refugees in Khyber Pakhtunkhwa and Punjab data statistics were used to calculate the total refugee families in these districts [16, 17]. The sample size was calculated by utilizing the sampling formula for the known population $n = N/\ 1 + N\ [e]^{\ 2}$ [18]. The total Afghan refugee families ($N = 35{,}082$) with sampling error ($e \pm 0.03$) were added to the formula to determine the sample size. A 10% rejection probability was estimated and added to the sample size. Therefore, 1,185 respondents were chosen from all provinces and regions using the proportionate random sampling formula ($n/N \times 100$) as presented in Table 1.

Data collection and analysis

The survey was executed by a team of two principal researchers and four bilingual Afghan refugee research associates who assisted the sampled Afghan refugees in filling out the questionnaires on paper and performed in-person interviews with respondents who were illiterate or requested interviews. A quantitative survey methodology with pre-validated and tested questionnaires was used to gather data on Afghan refugee health. Stakeholders gave their consent for the usage of the tools in Pakistan. The Syrian Refugee Survey was used to construct sociocultural determinants predicting health-associated quality of life [19]. The WHOQOL-BREF was used to measure the Health associated quality of life [20]. Statistical Package for Social Sciences (SPSS) version 24 was selected to perform univariate and bivariate analyses of the data. International investigations majority used average cutoff scores to compare the results. The subdomain's average scores were computed according to WHO–BREF guidelines. The relationship between sub-scale scores with predictors and sociodemographics was investigated by using an independent t-test and analysis of variance. The relationship of subdomain scores with gender, family setup, place of residence, employment status, access to health care, current health, and chronic health status was investigated by using independent t-tests. ANOVA was used to compare the means of variables with three or more categories. The variables that showed significant results with ANOVA were applied to the Tukey's HSD post-hoc test to examine all potential combinations of group differences when the homogeneity of variance assumption was met.

Ethical considerations

Ethical clearance for this assessment was granted by the Advance Studies & Research Board of the University of the Punjab (D.NO1950ACAD). Local Afghan refugees in charge of selected areas also permitted the project. Sampled refugees were briefed about the importance of the project, and their voluntary involvement, and consent in written form was obtained. Data anonymity and privacy were guaranteed throughout the project.

Results

Socio-cultural determinants and predictors of quality of life

According to the sociodemographic data of the Afghan refugees, the majority (39.2%) were between the ages of 46 and 60, married (55.4%), part of a joint family system (74.8%), lived in an urban area (59.9%), were receiving donor-supported housing (77.8%), spoke Pashtun as their mother tongue (50.5%), and had migrated to Pakistan since 2002 (57.9%). About 54.6% of respondents had received less than ten years education, 47% were employed, and 69.7% had a monthly family income below

Table 1 Province and district-wise sample size Estimation of Afghan refugees

Province/District	Sampling formula (n/N) ×100 = Province/Region wise sample size	Relative proportion
Khyber Pakhtunkhwa (Province)	(Khyber Pakhtunkhwa refugee families/Total refugee families) ×100 = Province wise sample Size (32674/35,082) ×100 = 1104	0.932
Haripur district	(Haripur refugee families/ Khyber Pakhtunkhwa refugee families) ×100 = District wise sample Size (11731/32674) ×100 = 396	0.334
Mardan district	(Mardan refugee families/ Khyber Pakhtunkhwa refugee families) ×100 = District wise sample Size (2226/32674) ×100 = 75	0.063
Peshawar district	(Peshawar refugee families/ Khyber Pakhtunkhwa refugee families) ×100 = District wise sample Size (11662/32674) ×100 = 394	0.333
Nowshera district	(Nowshera refugee families/ Khyber Pakhtunkhwa refugee families) ×100 = District wise sample Size (7055/32674) ×100 = 239	0.202
Punjab (Province)	(Punjab refugee families/Total refugee families) ×100 = Province wise sample Size (2408/35,082) ×100 = 81	0.068
Mianwali district	(Punjab refugee families/Total refugee families) ×100 = District wise sample Size (2408/35,082) ×100 = 81	0.068
Sample size	1185	1.0

25,000 Pakistani rupees. Nearly two-thirds of the informants (74.2%) stated that their socioeconomic status was low, 49.5% had access to healthcare, 48.9% were in good health, and 38.1% had chronic illnesses, as presented in Table 2. Nearly half of the refugees did not smoke (50.8%) and 57.6% had never used substance abuse (Naswar). Nearly two-thirds of the refugees shared cultural similarities with the host nation (74.9%). Over half of the refugees did not experience discrimination (53.5%), language barriers (54.2%), and sometimes felt socially included (56.9%). Nearly two-thirds (74.6%) of the participants consistently received socioeconomic aid from the government or donor organizations, 56.4% reported that they always had access to clean water, 57.1% to sanitation, 57.2% to education, 28.2% had visited a hospital in the past month, 52.2% claimed health care cost affordable, as mentioned in Table 3.

Percentage-wise distribution within subdomains

According to the outcomes of the physical domain component, the majority of the Afghan refugees responded to having much pain feeling and discomfort (31.1%), moderate medicinal aid dependence (29.4%), little energy level, and fatigue (34.2%), poor mobility in life (34.8%), were neither satisfied nor dissatisfied of everyday living activities (41.3%), were dissatisfied with sleep satisfaction (35.5%), and working capacity (36.6%).

The psychological domain component revealed that the majority of the Afghan refugees had little body appearance recognition (36.2%), were quite often in a negative emotional state (31.0%), had a low positive emotional state (35.0%), were neither satisfied nor dissatisfied with self-satisfaction (31.0%), showed moderate religious and spiritual beliefs (31.5%), and only low levels of intellectual concentration (39.5%).

As per the social domain component, the majority of the Afghan refugees were dissatisfied with personal relations (41.6%) and social help (37.4%), whereas most were neither satisfied nor dissatisfied with sexual relationships (37.3%).

The vast majority of Afghans indicated that they had no healthy physical surroundings (38.5%), freedom with a secure environment (39.6%), and financial assets (39.2%). Furthermore, they were very dissatisfied with recreational participation (44.8%), home-based environment (42.7%), and access to quality health care (42.3%), and were dissatisfied with transportation (37.1%) and general health (38.2%). Overall, they were neither satisfied nor dissatisfied with new learning opportunities (37.4%) and general quality of life (31.1%), according to the outcomes of the environmental and general health domain components as presented in Table 4.

Inferential analysis using independent t-test and ANOVA

Age, marital status, family setup, mother language, number of years in the host country, residence type, family monthly income, access to health care, current health status, and chronic health illness were non-significant with all subdomains. Gender was significant in the environmental domain only. The province of resettlement was significant with all subdomains. Place of residence was significant with social domain and environmental domain. Employment status, level of education, and self-reported socioeconomic status were significant only in the social domain. Average scores of subdomains in association with socio-cultural determinants are presented in Table 2.

Substance abuse (smoking), cultural compatibility, linguistic barriers, and social inclusion were non-significant with all the subdomains. Substance abuse (Naswar), discrimination, and socioeconomic support were significant only in the social domain. Access to clean water, access to sanitation, access to education, access to healthcare information, the last time visited a health facility, and healthcare cost affordability were non-significant in the physical domain, psychological domain, social domain, environmental domain, and general health domains as presented in Table 3.

The variables that showed significant results with analysis of variance were applied to the Tukey's HSD post-hoc test to examine all group differences when the homogeneity of variance assumption was met. The province of resettlement was significant with all subdomains. The physical domain mean difference scores were significant between Haripur-Mardan (-8.725) and Haripur-Nowshera (7.320). The psychological domain mean difference scores were significant between Haripur-Mardan (-7.245) and Haripur-Mianwali (-8.415). The social domain mean difference scores were significant between Haripur-Nowshera (14.53) and Haripur-Peshawar (-5.687). The environmental domain mean difference scores were significant between Haripur-Mardan (5.750), Haripur-Nowshera (8.107), Haripur-Peshawar (-3.453), and Haripur-Mianwali (-6.489). The general health domain mean difference score was significant for Haripur-Nowshera (8.107) only. Level of education means differences in scores were non-significant with the social domain. Self-rated socioeconomic status group mean differences score was non-significant with the social domain. Substance abuse (Naswar) and face discrimination mean difference scores were significant only with frequent-non-users (5.226) and sometimes-never (-4.392) categories. Socioeconomic support and last time visited health facility mean difference scores were non-significant with post-hoc Tukey's HSD as presented in Table 5.

Table 2 Average scores of subdomains in association with socio-cultural determinants

Socio-cultural determinants	*N*	Physical domain		Psychological domain		Social domain		Environmental domain		General health	
		Mean (SD)	*p*-value	Mean (SD)	*p*-value	Mean (SD	*p*-value	Mean (SD	*p*-value	Mean (SD	*p*-value
Age (in years)											
18–30	350	54.32 ± 19.2	0.41	46.93 ± 14.7	0.60	58.58 ± 22.4	0.06	48.21 ± 16.0	0.68	50.79 ± 20.1	0.72
31–45	281	52.02 ± 19.6		45.71 ± 14.0		61.76 ± 23.0		47.73 ± 15.8		49.90 ± 20.0	
46–60	465	53.57 ± 19.4		46.44 ± 15.2		57.61 ± 22.9		49.12 ± 16.5		50.11 ± 19.9	
> 61	89	51.76 ± 19.8		47.84 ± 14.6		56.21 ± 21.3		47.94 ± 17.5		52.44 ± 21.3	
Gender											
Male	613	52.55 ± 19.9	0.18	46.89 ± 14.8	0.37	58.23 ± 22.5	0.39	49.40 ± 16.7	0.03*	50.37 ± 20.5	0.90
Female	572	54.07 ± 18.9		46.12 ± 14.7		59.36 ± 22.9		47.39 ± 15.8		50.51 ± 19.6	
Marital status											
Married	656	53.31 ± 19.2	0.94	46.68 ± 14.7	0.88	59.07 ± 22.6	0.87	48.47 ± 16.5147.9 ± 16.3	0.68	49.99 ± 20.4	0.42
Unmarried	347	53.46 ± 19.5		46.44 ± 14.3		58.29 ± 23.0		49.24 ± 15.5		50.36 ± 19.4	
Separated	182	52.88 ± 20.2		46.08 ± 15.6		58.64 ± 22.6				52.20 ± 20.2	
Family setup											
Joint	886	53.34 ± 19.6	0.86	46.47 ± 14.8	0.86	59.01 ± 22.7	0.54	48.56 ± 16.4	0.64	50.47 ± 20.2	0.93
Nuclear	299	53.13 ± 18.9		46.65 ± 14.5		58.09 ± 22.7		48.05 ± 15.8		50.35 ± 19.6	
Place of residence											
Urban	448	53.15 ± 19.3	0.08	45.77 ± 14.3	0.69	59.73 ± 22.5	< 0.01*	48.56 ± 16.1	< 0.01*	50.63 ± 20.4	0.95
Rural	737	53.49 ± 19.6		47.64 ± 15.4		57.35 ± 23.0		48.24 ± 16.5		50.14 ± 19.5	
Province of resettlement											
Haripur	396	54.48 ± 18.0	< 0.01*	45.28 ± 13.0	< 0.01*	60.01 ± 22.0	< 0.01*	48.84 ± 14.8	< 0.01*	50.80 ± 20.4	< 0.01*
Mardan	75	63.21 ± 15.8		52.53 ± 17.9		54.80 ± 25.3		43.09 ± 11.1		57.58 ± 21.5	
Nowshera	239	47.16 ± 20.2		42.69 ± 15.2		45.48 ± 20.9		40.73 ± 18.3		43.83 ± 15.8	
Peshawar	394	52.42 ± 20.3		47.45 ± 14.1		65.70 ± 20.8		52.29 ± 15.7		51.92 ± 20.7	
Mianwali	81	60.56 ± 15.7		53.70 ± 16.7		61.97 ± 20.5		55.33 ± 13.9		54.33 ± 20.2	
Pakistan	1185	53.29 ± 19.4		46.52 ± 14.7		58.78 ± 22.7		48.43 ± 16.3		50.44 ± 20.1	
Mother language											
Dari	463	54.46 ± 19.6	0.19	47.01 ± 14.8	0.57	57.91 ± 22.7959.3 ± 22.8	0.57	48.33 ± 16.2	0.87	50.31 ± 20.3	0.97
Pasthu	599	52.78 ± 19.4		46.32 ± 14.7		59.29 ± 21.9		48.36 ± 16.2949.1 ± 16.8		50.56 ± 19.8	
Other	123	51.34 ± 18.5		45.58 ± 14.9						50.29 ± 20.3	
Number of years in the host country											
< 10	107	50.94 ± 19.9	0.34	45.11 ± 14.1	0.58	60.05 ± 23.2	0.43	46.17 ± 14.7	0.08	49.00 ± 19.5	0.61
10–19	392	54.03 ± 19.6		46.62 ± 15.4		57.60 ± 23.3		47.58 ± 16.2		51.07 ± 20.3	
20+ years	686	53.23 ± 19.3		46.68 ± 14.5		59.25 ± 22.3		49.27 ± 16.5		50.30 ± 20.0	
Residence type											
Owner	71	49.32 ± 2.43	0.19	46.81 ± 1.82	0.95	63.47 ± 2.41	0.20	48.40 ± 1.68	0.73	50.46 ± 2.36	1.00
Donor	922	53.64 ± 0.63		46.44 ± 0.49		58.49 ± 0.75		48.26 ± 0.54		50.44 ± 0.67	
Rent	192	53.08 ± 1.42		46.76 ± 1.00		57.02 ± 1.67		49.27 ± 1.18		50.40 ± 1.35	
Employment status											
Employed	559	52.93 ± 19.9	0.55	45.89 ± 14.5	0.16	60.29 ± 23.0	0.03*	48.39 ± 16.0	0.92	50.42 ± 20.2	0.97
Unemployed	626	53.61 ± 19.0		47.08 ± 15.0		57.42 ± 22.4		48.47 ± 16.5		50.46 ± 19.9	
Level of education											
Uneducated	429	53.38 ± 19.5	0.57	46.74 ± 14.8	0.41	58.56 ± 22.8	0.04*	47.83 ± 17.3	0.75	49.77 ± 19.6	0.25
< 10 years	647	53.38 ± 19.5		46.42 ± 14.8		57.99 ± 22.8		48.90 ± 15.6		50.27 ± 20.3	
10–14 years	99	51.59 ± 18.6		46.93 ± 13.9		63.61 ± 21.6		48.07 ± 15.9		54.11 ± 19.9	
15+ years	10	60.10 ± 17.1		38.90 ± 17.4		71.30 ± 13.5		47.40 ± 12.9		53.60 ± 24.2	

Table 2 (continued)

Socio-cultural determinants	*N*	Physical domain		Psychological domain		Social domain		Environmental domain		General health	
		Mean (SD)	*p*-value	Mean (SD)	*p*-value	Mean (SD	*p*-value	Mean (SD	*p*-value	Mean (SD	*p*-value
Family monthly income											
< 25,000	826	53.09 ± 19.4	0.75	46.42 ± 14.9	0.53	58.26 ± 23.0	0.10	48.47 ± 16.3	0.32	50.14 ± 19.8	0.64
25,000–50,000	241	53.86 ± 18.4		47.22 ± 14.4		60.81 ± 21.6		48.63 ± 15.5		51.26 ± 20.9	
50,001–75,000	84	52.47 ± 21.4		46.76 ± 13.9		60.86 ± 22.2		49.52 ± 16.9		52.04 ± 19.5	
> 75,000	34	56.14 ± 22.2		43.32 ± 15.9		51.85 ± 22.9		43.52 ± 19.3		47.91 ± 21.6	
Self-rated socioeconomic status											
High	32	57.25 ± 20.3	0.21	51.59 ± 17.3	0.09	52.34 ± 23.4	0.02*	45.03 ± 15.7	0.31	46.46 ± 19.1	0.45
Average	273	54.51 ± 17.7		45.64 ± 14.4		61.48 ± 21.9		49.34 ± 16.4		51.10 ± 20.8	
Low	880	52.76 ± 19.9		46.60 ± 14.7		58.17 ± 22.8		48.27 ± 16.2		50.37 ± 19.9	
Access to healthcare											
Always	586	53.81 ± 19.4	0.36	46.71 ± 14.8	0.65	58.20 ± 22.6	0.38	48.50 ± 16.3	0.88	50.31 ± 20.3	0.82
Sometimes	599	52.78 ± 19.4		46.32 ± 14.7		59.34 ± 22.8		48.36 ± 16.2		50.56 ± 19.8	
Current health status											
Healthy	579	53.39 ± 19.8	0.86	45.89 ± 14.5	0.15	58.57 ± 23.2	0.75	48.78 ± 16.6	0.47	49.91 ± 20.4	0.37
Sick	606	53.19 ± 19.1		47.12 ± 14.9		58.98 ± 22.2		48.10 ± 15.9		50.94 ± 19.7	
Chronic illness											
Yes	451	53.24 ± 18.6	0.95	47.23 ± 15.2	0.19	58.11 ± 22.7	0.43	47.50 ± 16.0	0.12	50.30 ± 19.9	0.85
No	734	53.32 ± 19.9		46.08 ± 14.5		59.18 ± 22.7		49.00 ± 16.4		50.52 ± 20.2	

Discussion

This survey is the first of its type among Afghan refugees in Pakistan to measure health-related quality of life and its associated factors using validated tools. The sampled refugee population was noticeably heterogeneous in terms of the number of socio-demographic variables and sociocultural determinants.

Demographics and geographical distribution

The majority of the Afghan refugees in the survey were adults and males which remains consistent with UNHCR data statistics, health care assessments on Afghan & Syrian refugees in Turkey, Sweden and national WHOQOL survey findings [21–26]. Marital and family setup findings revealed that most Afghan refugees were married and lived in joint family systems, reflecting similar trends observed in the region of Pakistan, Afghanistan & Iran in the host and refugee populations [24, 25, 27, 28]. The geographical distribution showed that most lived in Khyber Pakhtunkhwa also evident by UN data and prevailing studies [23, 29, 30]. Pashto-speaking Afghans were predominant in Pakistan [31, 32], in contrast to Dari-speaking Afghans in Iran [28, 33]. The long-term resettlement (over a decade) of Afghan refugees was observed, mirroring similar trends in Iran [28]. Most respondents were from rural areas and received housing aid from government and donor agencies, reflecting global refugee resettlement trends and financial assistance patterns [27, 34–39].

Socioeconomic challenges

Education levels among Afghan refugees in Pakistan were generally low, with nearly half having less than 10 years of schooling, reflecting Afghanistan's low literacy rates of 55% for males and 29% for females in 2020 [40]. Education levels among Afghan refugees in Sweden were also low [22], while in Iran, 50% of Afghan refugees were educated [28]. Employment and financial challenges reported include low employment rates, low wages, and the majority of families earning under 25,000 PKR (89.76 USD), with low socioeconomic status International research reported that refugees faced employment challenges, including low salary agreements and limited work occasions for females [41, 42]. In the USA, Afghan refugees had lower employment rates and family income compared to other refugee groups [43], while in Canada, they faced similar economic difficulties [44]. However, in Iran, nearly 80% of Afghan refugees were employed, with many in higher income groups, while low socioeconomic status was also observed among refugees in Uganda and Lebanon [28, 45, 46].

Substance abuse trends

Most Afghan refugees did not misuse Naswar, and only half of the Afghan refugees smoked in this survey. Smoking prevalence was 21.9% in Afghanistan and 9% among Afghan refugees in Iran [47, 48]. Naswar and smoking were prevalent in Afghan refugee cancer patients in

Table 3 Average scores of subdomains in association with predictors of quality of life

Socio-cultural determinants	*N*	Physical domain		Psychological domain		Social domain		Environmental domain		General health	
		Mean (SD)	*p*-value	Mean (SD)	*p*-value	Mean (SD)	*p*-value	Mean (SD)	*p*-value	Mean (SD)	*p*-value
Substance abuse (Smoking)											
Frequently	427	53.91 ± 18.9	0.71	46.87 ± 14.2	0.62	58.35 ± 22.3	0.39	47.83 ± 16.4	0.54	50.11 ± 20.7	0.70
Occasionally	156	52.92 ± 19.3		47.12 ± 15.5		56.95 ± 23.9		48.11 ± 16.6		51.67 ± 20.2	
Non-smokers	602	52.95 ± 19.8		46.11 ± 14.9		59.55 ± 22.6		48.94 ± 16.0		50.35 ± 19.6	
Substance abuse (Naswar)											
Frequently	348	53.15 ± 19.6	0.69	47.20 ± 14.0	0.28	62.01 ± 21.8	0.00*	50.12 ± 16.3	0.07	50.64 ± 21.2	0.43
Occasionally	154	54.54 ± 20.9		47.54 ± 15.4		60.29 ± 23.8		47.78 ± 16.5		48.49 ± 19.7	
Non-users	683	53.08 ± 19.0		45.94 ± 14.9		56.79 ± 22.7		47.72 ± 16.2		50.77 ± 19.5	
Cultural compatibility											
Always	888	53.67 ± 19.6	0.45	46.98 ± 14.6	0.17	58.64 ± 22.8	0.06	47.92 ± 16.3	0.15	50.72 ± 20.2	0.69
Sometimes	269	52.30 ± 18.8		45.17 ± 15.2		58.21 ± 23.0		49.77 ± 16.2		49.68 ± 19.5	
Never	28	50.60 ± 18.9		44.85 ± 13.1		68.57 ± 14.2		51.67 ± 15.3		48.82 ± 19.9	
Linguistic barriers											
Always	192	52.59 ± 19.3	0.80	45.13 ± 14.9	0.24	57.29 ± 21.8	0.34	47.43 ± 16.9	0.61	49.26 ± 20.2	0.51
Sometimes	351	53.12 ± 19.5		46.20 ± 14.5		58.01 ± 22.7		48.39 ± 16.6		50.02 ± 20.3	
Never	642	53.59 ± 19.4		47.10 ± 14.8		59.64 ± 22.9		48.75 ± 15.9		51.02 ± 19.9	
Face discrimination											
Always	190	55.19 ± 18.2	0.28	46.23 ± 13.8	0.95	58.58 ± 22.7	0.01*	47.95 ± 14.6	0.80	49.78 ± 19.7	0.40
Sometimes	361	53.42 ± 18.9		46.65 ± 14.7		56.01 ± 23.0		48.18 ± 16.6		51.62 ± 20.3	
Never	634	52.64 ± 20.0		46.53 ± 15.0		60.41 ± 22.4		48.72 ± 16.6		49.96 ± 20.0	
Social inclusion											
Always	280	54.73 ± 19.6	0.29	47.12 ± 14.8	0.30	57.10 ± 22.3	0.36	48.00 ± 16.8	0.84	51.29 ± 19.6	0.48
Sometimes	674	52.60 ± 19.2		46.71 ± 15.0		59.39 ± 22.6		48.66 ± 16.1		50.52 ± 20.2	
Never	231	53.54 ± 19.9		45.21 ± 13.8		59.02 ± 23.4		48.29 ± 16.0		49.15 ± 20.2	
Socioeconomic support											
Always	884	53.57 ± 19.4	0.62	46.78 ± 14.7	0.55	59.62 ± 22.9	0.03*	48.67 ± 15.8	0.67	50.78 ± 20.0	0.22
Sometimes	242	52.21 ± 19.3		45.87 ± 14.5		55.35 ± 22.1		47.65 ± 17.3		48.62 ± 19.9	
Never	59	53.54 ± 20.3		45.25 ± 15.9		60.13 ± 21.2		48.08 ± 18.4		52.71 ± 21.1	
Access to clean water											
Always	668	53.58 ± 19.4	0.80	46.65 ± 14.4	0.48	59.35 ± 22.3	0.43	47.74 ± 16.1	0.11	51.03 ± 20.1	0.50
Sometimes	426	53.04 ± 19.5		46.00 ± 15.1		57.65 ± 23.2		49.74 ± 16.4		49.69 ± 20.1	
Never	91	52.34 ± 18.8		47.96 ± 15.0		59.85 ± 23.0		47.36 ± 16.2		49.57 ± 19.7	
Access to sanitation											
Always	677	53.62 ± 19.2	0.46	46.81 ± 14.6	0.53	59.35 ± 22.5	0.11	48.53 ± 16.3	0.77	50.44 ± 20.3	0.87
Sometimes	437	52.48 ± 19.7		46.34 ± 14.9		58.75 ± 22.8		48.11 ± 15.5		50.63 ± 20.1	
Never	71	55.04 ± 20.0		44.83 ± 14.9		53.45 ± 23.7		49.50 ± 19.6		49.28 ± 17.8	
Access to education											
Always	678	53.07 ± 19.5	0.63	47.16 ± 14.7	0.16	59.65 ± 22.6	0.31	49.04 ± 15.8	0.27	50.36 ± 20.3	0.98
Sometimes	411	53.23 ± 19.4		45.89 ± 14.3		57.59 ± 22.8		47.39 ± 16.7		50.51 ± 20.1	
Never	96	55.09 ± 18.7		44.65 ± 16.3		57.69 ± 22.9		48.60 ± 17.5		50.70 ± 18.1	
Access to healthcare information											
Always	82	52.43 ± 2.07	0.83	47.20 ± 1.61	0.61	60.54 ± 2.52	0.36	48.33 ± 16.2	0.11	50.31 ± 20.3	0.39
Sometimes	403	53.00 ± 0.97		45.95 ± 0.75		57.54 ± 1.16		48.36 ± 16.2		50.56 ± 19.8	
Never	700	53.55 ± 0.73		46.76 ± 0.55		59.28 ± 0.84		49.14 ± 16.8		50.29 ± 20.3	
Last time visited health facility											
last 1 month	334	52.15 ± 19.1	0.07	46.53 ± 14.7	0.94	60.68 ± 22.3	0.18	48.42 ± 16.1	0.79	48.76 ± 19.7	< 0.01*
last 1 year	394	55.11 ± 19.4		46.34 ± 14.6		57.77 ± 22.5		48.03 ± 16.5		49.04 ± 20.1	
> than 1 year	457	52.54 ± 9.60		46.66 ± 14.9		58.25 ± 23.1		48.79 ± 16.2		52.87 ± 20.1	
Health care cost affordability											
Always	619	52.39 ± 0.77	0.12	46.10 ± 0.59	0.10	58.72 ± 0.93	0.84	48.59 ± 0.67	0.88	50.74 ± 0.80	0.85
Sometimes	455	54.75 ± 0.92		46.41 ± 0.68		59.10 ± 1.05		48.38 ± 0.73		50.17 ± 0.94	
Never	111	52.29 ± 1.84		49.32 ± 1.43		57.72 ± 2.09		47.76 ± 1.56		49.84 ± 1.89	

Table 4 Percentage-wise health-associated quality of life subdomains response distribution among Afghan refugees

Items	*n* (%)				
Physical domain					
	Not	Little	Moderate	Much	Extreme
Pain feeling and discomfort	179 (15.1)	106 (8.9)	310 (26.2)	369 (31.1)	221 (18.6)
Medicinal aid dependence	116 (9.8)	162 (13.7)	348 (29.4)	252 (21.3)	307 (25.9)
	Not	Little	Moderate	Mostly	Completely
Energy level and fatigue	199 (16.8)	405 (34.2)	345 (29.1)	156 (13.2)	80 (6.8)
	Very poor	Poor	Neither	Good	Very good
Mobility in life	255 (21.5)	412 (34.8)	299 (25.2)	107 (9.0)	112 (9.5)
Everyday living activities	Very dissatisfied	Dissatisfied	Neither	Satisfied	Very satisfied
	160 (13.5)	275 (23.2)	489 (41.3)	146 (12.3)	115 (9.7)
Sleep satisfaction with rest	241 (20.3)	421 (35.5)	213 (18.0)	155 (13.1)	155 (13.1)
Working capacity	289 (24.4)	434 (36.6)	216 (18.2)	136 (11.5)	110 (9.3)
Psychological domain					
	Not	Little	Moderate	Mostly	Completely
Body appearance	167 (14.1)	429 (36.2)	299 (25.2)	123 (10.4)	167 (14.1)
Negative emotional state	Never	Seldom	Quite often	Very often	Always
	160 (13.5)	146 (12.3)	367 (31.0)	343 (28.9)	169 (14.3)
Positive emotional state	Not	Little	Moderate	Much	Extreme
	231 (19.5)	415 (35.0)	290 (24.5)	143 (12.1)	106 (8.9)
Self-satisfaction(esteem)	Very dissatisfied	Dissatisfied	Neither	Satisfied	Very satisfied
	148 (12.5)	331 (27.9)	368 (31.1)	213 (18.0)	125 (10.5)
Religious and spiritual beliefs	Not	Little	Moderate	Much	Extreme
	171 (14.4)	247 (20.8)	373 (31.5)	212 (17.9)	182 (15.4)
Intellectual concentration	Not	Little	Moderate	Much	Extreme
	110 (9.3)	468 (39.5)	239 (20.2)	207 (17.5)	161 (13.6)
Social domain					
Personal relations	Very dissatisfied	Dissatisfied	Neither	Satisfied	Very satisfied
	144 (12.2)	493 (41.6)	204 (17.2)	186 (15.7)	158 (13.3)
Social help	175 (14.8)	443 (37.4)	205 (17.3)	215 (18.1)	147 (12.4)
Sexual relationship	146 (12.3)	287 (24.2)	442 (37.3)	154 (13.0)	156 (13.2)
Environmental domain					
Physical surroundings healthy	Not	Little	Moderate	Much	Extreme
	456 (38.5)	432 (36.5)	247 (20.8)	27 (2.3)	23 (1.9)
Freedom with a secure environment	469 (39.6)	424 (35.8)	260 (21.9)	24 (2.0)	8 (0.7)
Financial assets	Not	Little	Moderate	Mostly	Completely
	465 (39.2)	404 (34.1)	282 (23.8)	18 (1.5)	16 (1.4)
Recreational participation	531 (44.8)	309 (26.1)	280 (23.6)	22 (1.9)	43 (3.6)
New learning opportunities	409 (34.5)	443 (37.4)	250 (21.1)	16 (1.4)	67 (5.7)
Home-based environment	Very dissatisfied	Dissatisfied	Neither	Satisfied	Very satisfied
	506 (42.7)	441 (37.2)	197 (16.6)	16 (1.4)	25 (2.1)
Transportation	431 (36.4)	440 (37.1)	236 (19.9)	51 (4.3)	27 (2.3)
Access to quality healthcare	501 (42.3)	321 (27.1)	260 (21.9)	50 (4.2)	53 (4.5)
General health domain					
General quality of life	Very poor	Poor	Neither	Good	Very good
	174 (14.7)	368 (31.1)	188 (15.9)	308 (26.0)	147 (12.4)
General health	Very dissatisfied	Dissatisfied	Neither	Satisfied	Very satisfied
	136 (11.5)	453 (38.2)	233 (19.7)	200 (16.9)	163 (13.8)

Table 5 Results of Post-Hoc Tukey's HSD

Items	Mean difference	Standard error	*p*-value	95% Confidence Interval	
				Lower Bound	Upper Bound
Province of resettlement					
Physical domain	-8.725	2.395	0.00*	-15.27	-2.180
Haripur-Mardan	7.320	1.558	0.00*	3.062	11.577
Haripur-Nowshera	2.063	1.353	0.54	-1.634	5.762
Haripur-Peshawar	-6.080	2.320	0.06	-12.418	0.257
Haripur-Mianwali					
Psychological domain	-7.245	1.823	0.00*	-12.227	-2.263
Haripur-Mardan	2.589	1.186	0.18	− 0.6514	5.829
Haripur-Nowshera	-2.171	1.030	0.21	-4.986	0.6436
Haripur-Peshawar	-8.415	1.765	0.00*	-13.240	-3.591
Haripur-Mianwali					
Social domain	5.217	2.715	0.30	-2.201	12.636
Haripur-Mardan	14.53	1.766	0.00*	9.711	19.362
Haripur-Nowshera	-5.687	1.534	0.00*	-9.879	-1.495
Haripur-Peshawar	-1.957	2.629	0.94	-9.141	5.226
Haripur-Mianwali					
Environmental domain	5.750	1.969	0.02*	0.368	11.132
Haripur-Mardan	8.107	1.281	0.00*	4.606	11.607
Haripur-Nowshera	-3.453	1.113	0.01*	-6.494	− 0.4125
Haripur-Peshawar	-6.489	1.907	0.00*	-11.701	-1.278
Haripur-Mianwali					
General health	-6.783	2.492	0.05	-13.593	0.025
Haripur-Mardan	6.970	1.621	0.00*	2.541	11.399
Haripur-Nowshera	-1.125	1.408	0.93	-4.973	2.721
Haripur-Peshawar	-3.530	2.413	0.58	-10.124	3.063
Haripur-Mianwali					
Level of education					
Social domain	0.569	1.412	9.97	-3.065	4.204
Uneducated- <10 years	-5.054	2.530	0.18	-11.563	1.455
Uneducated- 10–14 years	-12.738	7.259	0.29	-31.413	5.937
Uneducated- 16 years & >					
Self-rated socioeconomic status					
Social domain	-9.143	4.24	0.07	-19.094	0.807
Upper class- Middle class	-5.831	4.08	0.32	-15.415	3.753
Upper class- Lower class	3.312	1.57	0.08	-0.377	7.00
Middle class - Lower class					
Substance abuse (Naswar)					
Social domain	1.725	2.191	0.71	-3.416	6.866
Frequently-Occasionally	5.226	1.490	0.00*	1.727	8.725
Frequent-Non-users	-3.501	2.019	0.19	-8.240	1.237
Non-users-Occasionally					
Face discrimination					
Social domain	2.564	2.032	0.41	-2.205	7.335
Always-Sometimes	-1.827	1.875	0.59	-6.229	2.574
Always-Never	-4.392	1.495	0.00*	-7.901	− 0.8830
Sometimes-Never					
Socioeconomic support					
Social domain	4.272	1.646	0.02	0.408	8.136
Always-Sometimes	− 0.5077	3.051	0.98	-7.669	6.653
Always-Never	-4.780	3.295	0.31	12.513	2.953
Sometimes-Never					
Last time visited a health facility					
General health	-2.958	1.445	0.10	-6.350	0.434
last 1 month	− 0.3905	1.399	0.95	-3.674	2.893
last 1 year	2.567	1.336	0.13	-0.568	5.703
> than 1 year					

Pakistan [49, 50], with 4.2% of families reporting illicit substance use in Iran [51].

Cultural compatibility and impact on Afghan refugees' integration

The decision of where to migrate is influenced by the culture of the host society [52]. Afghan refugees, especially from the Pashtun clan, have cultural, linguistic, and religious similarities with the people of Khyber Pakhtunkhwa, Pakistan, and Afghanistan, which aids in their integration [32]. High cultural compatibility between refugees and host societies leads to smoother adaptation, social acceptance, and better mental well-being, while significant cultural differences can increase stress and hinder successful integration. Nearly two-thirds of Afghan refugees in Pakistan were culturally compatible, as both the host population and refugees shared similar culture and religion [53]. Similarly, cultural compatibility between Turkish natives and Syrian refugees facilitated their integration [54]. However, in Europe and the UK, the cultural compatibility of Muslim refugees was a subject of media concern [55].

More than half of Afghan refugees in Pakistan did not face linguistic barriers, as the majority of refugees and the host areas share a common language. However, inadequate language skills have been identified as a significant barrier to health outcomes for refugee communities in countries like England and the USA [56, 57].Communication challenges were also evident in the healthcare sector for Afghan refugees in Iran [58, 59]. Prejudice and social exclusion have been linked to detrimental effects on one's health as well as quality of life [60]. Afghan refugees almost half of the population never experienced discrimination and felt included socially. Discrimination and lack of social inclusion for refugees were reported in developed nations as well as for Afghans in Pakistan and Iran [32, 61–63].

Basic life services and health care access

More than 50% of the worldwide population struggles with poor sanitation and hygiene, and approximately 2.2 billion individuals still lack access to clean water [64]. The Afghan refugee survey revealed that almost 56.4% had daily access to clean water and 57.1% had constant access to bathrooms. Safe drinking water availability and sanitation facilities were challenges in refugee resettlements globally [65–67]. Access to education as a basic human right was not prioritized in humanitarian crises [68] and limited access or enrollment in educational institutions was evident in different refugee resettlements in Bangladesh [69], Thailand [70], Pakistan [71], Iran [72], Turkey, Germany, Lebanon, Greece and Sweden [73]. The 57.2% claimed had ongoing access to educational opportunities in Pakistan as revealed by the findings of this investigation.

Health state requires access to quality healthcare during illness transition. International investigations revealed that refugees had limited or restricted healthcare access in developed Europe as well as developing countries of Asia [14, 74–78]. Nearly half of the sampled Afghan refugees (49.5%) claimed that they always had access to healthcare in Pakistan. Healthcare facts-seeking behavior is considered one of the coping mechanisms for emotional well-being during sickness [79]. Media has served as an important means of communicating and educating about health [80]. Healthcare information was not available to 59.1% of the refugee population via social, print, or electronic media in developing nations like Pakistan. Congolese refugee's access to health care information was 57% in the United States of America [81], whereas inadequate access was also reported among refugees in Lebanon and Malaysia [82, 83].

The criteria for this investigation included both healthy and sick populations, therefore over half of the refugees (51.1%) self-reported being ill. Afghan refugees who had a chronic health condition were 38.1% in this survey. Hypertension and musculoskeletal diseases were the most prevalent chronic health conditions among the Syrian and Iraqi refugee population, whereas psychological health issues were identified in Greece and Europe [76, 84, 85]. The majority of the Afghan refugees (38.5%) visited a medical facility for health consultation more than a year ago. This has been documented also in other studies about difficulties that refugees had faced visiting the healthcare in the countries where they were resettled. Healthcare cost affordability was challenging for 52.2% of the refugee population every time during health illness transition in this research similar to Syrian migrants (51.8%) in Jordan [86]. Medical care needs were not met for Sudanese migrants in Uganda, Syrian migrants in Canada, refugees in the United Kingdom, and New Zealand, and Afghan refugees in Iran [58, 87–91].

Health-related quality of life

The main objective of the current survey was to gather vital data about Afghan refugees' health-related quality of life in Pakistan using the World Health Organization tool. The association between sociocultural determinants and quality-of-life domains was investigated. In previous studies, the majority used an average cutoff score (<60) as an indicator of poor quality of life to compare the results. The scores in the domains were heterogeneous in this survey.

Average scores in all the domains of health-associated quality of life were lower for the Afghan refugees from standard cutoff criteria, as well as in comparison to the host population of Pakistan. The average scores

for the entire Afghan sample were lowest for the social domain (Afghan refugee's 58.78 ± 22.74 vs. host population 72.0 ± 16.5), physical domain (Afghan refugee's 53.29 ± 19.46 vs. host population 65.0 ± 15.2), general health (Afghan refugee's 50.44 ± 20.10 vs. host population 68.0 ± 18.0), environmental domain (Afghan refugee's 48.43 ± 16.30 vs. host population 55.5 ± 15.0) and psychological domain (Afghan refugee's 46.52 ± 14.78 vs. host population 67.4 ± 15.0) [92].

Substantially lower ratings in the domain of physical health for refugees may be caused by difficulty navigating an unfamiliar health system that may be expensive and demanding in terms of the legal documents to avail of the services. Physical health domain average scores of Afghan refugees (53.29) in Pakistan were lower from Palestinian refugees in Jordan (64.4), Syrian refugees in Germany (73.10), and African refugees in Brazil (56.9), however higher from Somalian refugees in the USA (44.69), Syrian refugees in Jordan (50.68) and diverse refugees' group in Denmark (25.57), Netherlands [38], and Norway (28.5). Lower psychological domain scores, which are especially prevalent among refugees, were linked to the traumatic experiences they endure, the scarcity of skilled mental health professionals, and language barriers in the host nation, all of which can have a negative effect on mental health. Psychological health domain average scores of Afghan refugees (46.52) in Pakistan were lower from Palestinian refugees in Jordan (56.5), Syrian refugees in Germany (65.39), African refugees in Brazil (52.9), Somalian refugees in the USA (52.83), Syrian refugees in Jordan (49.35), however higher from diverse refugees' group in Denmark (27.52), Netherlands (44.0), and Norway (25.6).

The social domain seems strongly associated with the sense of loss of possessed society as well as the cultural difference felt in the host nation. Social relationship domain (58.78) average scores of Afghan refugees in Pakistan were lower from Syrian refugees in Germany (68.38) but higher from Palestinian refugees in Jordan (58.3), African refugees in Brazil (56.3), Somalian refugees in USA (50.04), Syrian refugees in Jordan (49.82), diverse refugees' group in Denmark (39.66), Netherlands (44.0), and Norway (36.6). The refugees' lower scores in the environmental health domain were associated with their lower employment rates, insecure income, substandard living standards, lack of access to recreational activities, and poor transportation facilities. Environmental health (48.43) domain average scores of Afghan refugees in Pakistan were lower from Palestinian refugees in Jordan (51.3), Syrian refugees in Germany (60.45) but higher from African refugees in Brazil [38], Somalian refugees in USA (46.32), Syrian refugees in Jordan (47.37) and diverse refugees' group in Denmark (39.87), Netherlands (50.0) and Norway (45.2). There were no precise calculations or studies on the population of Afghan refugees to compare with this research survey in the general health domain of the refugees [93–100]. Hence this study is deemed exclusive in the general health domain of the Afghan refugees.

Sociocultural determinants association with health-related quality of life subdomains

Afghan refugees' health-related quality of life (HRQoL) scores was influenced by various sociodemographic factors. Higher physical domain scores were linked to females, unmarried individuals, joint families, donor-supported housing, rural areas, and higher incomes. Psychological domain scores were higher for males, urban residents, and those with higher incomes. Social relationship scores were higher for those aged 31–45, urban dwellers, married individuals, homeowners, joint family members, employed people, and those with higher education and income. Environmental domain scores were higher for men, urban residents, renters, joint families, and divorced individuals. General health scores were higher for urban residents, joint family members, and divorced individuals. These patterns were consistent with HRQoL findings in the general population of Pakistan [24]. No global or national studies explored these specific sociodemographic factors and HRQoL predictors.

The findings indicated that Afghan refugees in urban areas had higher average scores in the social domain of health-related quality of life compared to those in rural areas. Similar trends were observed in urban areas in developed countries showed higher scores, while urban areas in developing countries had lower scores [101, 102]. Living in a rural area was associated with a higher quality of life in Pakistan's disease population [103]. Employed refugees had higher average scores in the social domain, reinforcing the idea that employment contributes to better quality of life [104]. Gender average scores were higher in the environmental domain of health-associated quality of life for male Afghan refugees. However, gender differences were not observed in literature in the environmental domain [105].

Mardan average scores were higher for physical and general health domains and Mianwali average scores were higher for psychological, social, and environmental domains. Life quality varies with the place of resettlement [106]. Higher-educated Afghan refugees had better quality of life scores in the social domain. Education improves life quality [107].

Substance abusers (Naswar) had high scores in social domain quality of life. International statistics revealed poor life quality of drug abusers [108, 109]. Afghan refugees who never faced discrimination in Pakistan had better quality of life scores. Discrimination among the population was considered a major contributor to poor quality of life [110, 111]. Afghan refugees who never

received socioeconomic support had higher scores in the social domain. General health domain scores were higher for refugees who visited healthcare facilities last year. These two findings were exceptional to relate with global literature.

Recommendations

This comprehensive survey recommended interventions at the national, provincial, stakeholder, and refugee levels to develop policy prospects and healthcare interventions. The development of national policy and provincial policies to include refugees in health insurance programs like The Universal Public Health Insurance of Iran is essential to improve the health of refugees because healthcare access remains a key factor in life quality. Afghan refugees' proof of registration cards just like Pakistan national's identification cards should be added to the Sehat Sahulat Program (National Health Insurance Program) of Pakistan for better availability, accessibility, and affordability of health care in the national system. The distribution of resources for the healthcare stakeholders of refugees may be improved by designating a proportion of the provincial annual healthcare budget for refugee health. Although there is substantial cooperation between provincial governments and global stakeholders in the current refugee setups in Punjab and Khyber Pakhtunkhwa, more was required for a better quality of life in terms of health in refugee areas, including construction and upgradations of health care facilities, prompt referral systems, trained health care workers, employment opportunities, business skills training programs, educational setups with teaching faculty, basic life facilities(drinking water, sanitation access) and recreational activities. The local governments as well as other global stakeholders have established basic educational facilities in the refugee communities, however it is important to enforce the 'educate every child' policy in refugee settings so that the next generation of refugees will be familiar with both the national language, Urdu, and the international language, English, for improved health awareness. Afghan refugees in Pakistan may prioritize educating their children to improve their career prospects and healthcare communication. The adult generation of Afghan refugees may emphasize acquiring technical skills for better employment and financial resources to improve the quality of life in the host country.

Directions for future research

This investigation provides an overview of the health status of Afghan refugees in selected regions Nevertheless, additional qualitative and quantitative research is required in all refugee-hosting regions with sizable representative populations to investigate significant sociocultural determinants of health-associated quality of life. The involvement of the government and global stakeholders in the refugee hosting areas may support future academic studies at the national level, particularly in security-restricted regions. Periodic health care monitoring and evaluation visits of the refugee hosting areas by the government and international stakeholders may also aid in determining the current situation and guide future courses of action. The existing healthcare needs may also be observed by academic scholars from local universities who may then offer innovative suggestions for addressing local needs.

Strengths and limitations

The methodological strengths of the research include the use of pre-validated tools, a large sample size, community-based, adult age group involvement, healthy as well as unwell refugees, and both genders participation from a sociocultural conservative stratum. The interview-based survey was also carried out in refugees' familiar languages of Dari and Pashtu, and native language speakers were hired to include the uneducated refugees. The fact that this research relies on refugee interviewed/self-documented data during the COVID-19 pandemic, which might not fully reflect real behavior, was also one of the survey's main limitations. This cross-sectional investigation only gives a snapshot of limited factors affecting the health-associated quality of life among Afghan refugees in a precise time and environment and the number and nature of determinants may vary over the period. A standard causal relationship between sociodemographic characteristics, predictors, and the outcome variable could not be established due to the cross-sectional design of the current investigation. The longitudinal investigation was not planned due to the time and financial limits. Health-associated quality of life among refugees and the general population varies with the context, so it remains important to be cautious when generalizing the findings of this investigation.

Conclusions

SDG 3 focuses on human health, and its target accomplishments include the provision of standardized health care for refugees in host countries including Pakistan for sustainable development worldwide. This survey was perhaps the preliminary attempt to evaluate the factors influencing the health-associated quality of life among Afghan refugees in Pakistan and Asia. The outcomes of this survey were consistent with research done in other countries around the world on refugee populations, although there were also some substantial differences. The Afghan refugees' average scores across all health-associated quality-of-life domains were lower than both the host population of Pakistan and the standard cutoff criteria. This initial survey to examine health-associated quality of life among

Afghan refugees in Pakistan added new data about the health status of refugees from Afghanistan and serves as a reference point that could aid stakeholders in strengthening health promotion initiatives in the health care system for better health outcomes.

Abbreviations

ANOVA	Analysis of Variance
KPK	Khyber Pakhtunkhwa
SDG	Sustainable Development Goal
USA	United States of America
WHO	World Health Organization
WHOQOL-BREF	World Health Organization Quality of Life

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Author contributions
AUR and RZ conceptualized the survey. AUR and UM were responsible for data collection. AUR and RZ analyzed and interpreted the data. AUR and UM drafted the manuscript. RZ and FF revised it critically for important intellectual content. All authors read and approved the final manuscript.

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Data availability
The dataset used during the current study is available from the corresponding author upon reasonable request.

Declarations

Ethics approval and consent to participate
Ethical clearance for this assessment was granted by the Advance Studies & Research Board of the University of the Punjab (D.NO1950ACAD). Local Afghan refugees in charge of selected areas also permitted the project. Sampled refugees were briefed about the importance of the project, and their voluntary involvement, and written informed consent was obtained from all subjects and/or their legal guardian(s). Data anonymity and privacy were guaranteed throughout the project.

Consent for publication
Not applicable.

Competing interests
RZ and FF serve on the Editorial Board of BMC Public Health as Associate Editors. The remaining authors declare no conflict of interest.

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