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Internal migration and mental disorders among the adult population: a community-based cross-sectional study in Nepal

Tula Ram Sijali[1]

1 Institute for Social and Environmental Research-Nepal

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Abstract

Background: Mental disorders are highly prevalent globally, especially in low- and middle-income countries. Migration within a country (internal migration) may be a risk factor for mental illness due to challenges faced in a new environment. However, research on internal migration and mental health is limited, especially in Nepal.

Methods: This cross-sectional study analyzed data from the 2022 Nepal Demographic and Health Survey. Mental disorders (depression/anxiety) were the outcome. Key variables were internal migration status, demographic factors, and self-reported health status. Logistic regression identified factors associated with mental disorders.

Results: Among 11,976 participants, 5% reported mental disorders. In adjusted analysis, mental disorders were associated with poor self-reported health (aOR 5.74), older age (aOR 3.03 for ages 40-49 versus 15-19), and female gender (aOR 2.20). Internal migration was not independently associated with mental disorders (aOR 0.98).

Conclusions: Poor health, older age, and female gender - but not internal migration - were risk factors for mental disorders in this Nepali population. Further research should explore drivers of mental illness in vulnerable groups to inform mental health interventions.

Keywords: Migration, Mental disorders, Self-reported health.

Introduction

Mental disorders are highly prevalent and a leading cause of years lived with disability (YLDs) globally. Mental disorders are a widespread, under-treated, and under-resourced public health burden worldwide [1]. Anxiety and depressive disorders are the most common mental disorders in males and females [2]. They affect a person's capability to cope with stress, understand their own abilities, and influence thinking, feeling, and behavior. Mental disorders lead individuals and

families into poverty, inhumane living conditions, increase the risk of human rights violations, sexual abuse, prevent the utilization of personal liberty, the right to vote, and participation effectively and fully in public life [3].

970 million people are suffering from mental disorders, and among them, 8 million deaths occur each year worldwide. 82% of people with mental health conditions live in low- and middle-income countries (LMIC) [2]. Of the total mentally disordered population, 13.2% live in the South East Asia Region. Among the adult population, 10% are suffering from any type of mental disorder in Nepal [4].

Mental health conditions are severely underserved, neglected, under-resourced, and research gaps exist all over the world. Genetic factors, abuse, violence, crises, alcohol and drug use, poor access to services, injustice, discrimination, social exclusion, inequalities, conflict, forced displacement, and international migration are known risk factors for anxiety and depression. When people migrate to a new place, they may face challenges of poor living conditions, adverse socioeconomic status, perceived discrimination, isolation, anxious family, cut-off social networking, uncertainty, a new working environment, and difficulty accessing basic services [2]. Migrants have a higher risk of mental disorders than local residents, and studies have shown that over the short or the long term, migration increases the risk of psychiatric disturbances [5]. Empirical studies in different countries, including the United States, Russia, Germany, and other European countries, showed that migrant workers often have less access to healthcare services when compared to non-migrants in the same country [6]. Studies have focused on international migrants who left their home country and traveled to another new country to inhabit residence or work for a longer time [7]. There are limited studies focusing on internal migration and access to primary health care services, including family planning [8]. There is no study in Nepal concentrating on mental health and associated factors for increasing the risk of mental illness among those who relocated within the same country. This study aimed to investigate whether internal migration is an independent factor for increasing the risk of mental disorders among the adult migrant population compared with the participants who have always lived in a location/region. Thus, the study objectives were to assess the prevalence and independent factors for increasing the risk of mental disorders among the Nepali adult population.

Methodology

Setting

The Federal Democratic Republic of Nepal is a landlocked country in South Asia, between China to the north and India to the east, south, and west. The country has a federal parliamentary republic and is made up of 7 provinces, with the nation's capital located in Kathmandu. Nepal has diverse geography that includes the Tarai or flat river plain in the south, central hill regions, and the mountainous Himalayas in the north. In September 2015, Nepal's Constituent Assembly declared changes in the administrative units and reclassified urban and rural areas in the country. Administratively, it is divided into seven provinces with 77 districts, 293 metropolitan areas/municipalities, and 460 rural municipalities. Ecologically, the country is divided into three zones (Mountain, Hill, and Terai) with diverse topography and climate. According to the 2021 census, the total population of the country is 29.16 million, and the female population is slightly

more than male (ratio 100:95) [9]. More than half of the total population resides in the Terai. The population is diverse in terms of cultures, religion, caste, ethnicity, and language. More than 81% of the population are Hindu. Women's literacy rate is low (57%) compared to men (75%) [10].

In general, migration refers to the process of leaving one's country to live in another country, and the word migrant refers to those persons who have shifted to a new place or country. Internal migration is any household member who was not born in their current place of residence but who moved to their current residence from another VDC or municipality or from another country [11]. The number of migrants is increasing globally[6], and 39.3% of the total Nepali population internally migrated from their birthplace to a new location for work (15.2%), marriage (38.2%), study (7.8%), business (2.8%), and others [12]. Migration has positive as well as negative consequences; it can result in various difficulties, including reproductive and maternal health problems [13].

Study Design

This is a cross-sectional study conducted using secondary data from the Nepal Demographic and Health Survey (NDHS)-2022. The survey started on January 5, 2022, and was completed on June 22, 2022. The data collection work was slightly disrupted due to the pandemic of COVID-19 and local elections in the country.

Sampling and Sample Size

A two-stage stratified sampling method was used in the survey. In the first stage, 14 sampling strata were created in each province, and 476 primary sampling units (PSUs) were selected with probability proportional to PSU size.

In the second stage, 14,280 households were selected from the PSUs. All women aged 15-49 years who were permanent residents or visitors, and in half of the selected households, all men aged 15-49 years who were permanent residents or visitors and stayed in the selected household the night before the survey were eligible for the study. Details of the sample selection procedure are shown in Chart 1 below:

Survey Instrument and Data Collection Procedure

The DHS Program's model questionnaires were used with country-specific modifications relevant to Nepal's public health concerns. All men's and women's questionnaires were programmed into tablet computers to facilitate computer-assisted personal interviewing (CAPI) for data collection purposes, with the capability to choose any of the three languages for each questionnaire. Data collection for the 2022 NDHS was carried out by 19 trained field teams, and the data collection processes were monitored by trained supervisors at multiple stages.

Measurement

Outcome variable: Mental disorders were the outcome variable in the study. Anxiety and depression status were used to define the mental disorders of the studied participants. A question about mental health, "Ever been told by a

doctor/healthcare worker you have depression and anxiety," was asked in the survey. If the response was 'yes' for depression and anxiety or both, it defined mental disorders and was coded "1"; otherwise, no mental disorders were coded "0".

Covariate variables: In the 2022 NDHS, a question, "How long have you been living continuously in the current place of residence?" was asked. Those participants who answered "always" are treated as "non-migrants," while those participants who reported "number of years lived in the current place of residence" are considered as "migrants." Self-reported health condition and demographic information (age, sex, ethnicity, religion, education, marital status, occupation, ecological region, type of place, type of family, wealth index combined, head of household, and province) of the participants were used as covariates in the analysis. A complete definition of the outcome variable and covariates is shown in Table 1 below:

Table 1. Variables and their description

Variables	Definition
Outcome variable	
Mental disorders	Depression or anxiety anyone or both diagnosed before the time of interview conducted is considered mental disorders.
Covariates	
Internal Migration	Internal migration is defining the participants who shifted with their family from the birth place to another new residence in the country before presiding interview (o-48 years).
Self-reported health condition	Self reported health condition was recorded as very good, good, moderate, bad and very bad. The responses were reorganized in to three categories, 'good', 'moderate' and 'bad' for studying.
Age	Completed age in years at the time of interview conducted.
Sex of respondent	Self-reported gender identity of participants-male, or female.
Ethnicity	Self-reported caste of the participants, Brahmin/Chhetri, Janajaati, Dalit, Madheshi, Muslim and other.
Religion	Self-reported religious belief of the participants. The belief of the participants was divided in Hindu, Buddhist, Muslim, Christian and others for the studying purpose.
Education	Self-reported number of education years completed-no education, basic, secondary, higher
Current marital status	Self-reported marital status at the time of interview, like never in union, married, widows, divorce, separated and other were reorganized as - unmarried, married, other
Occupation	Self-reported occupation at the time of interview- unemployed, service, business, self-employed, manual worker and other
Province	Self reported permanent address/province of the participants at the time of interview completed.
Ecological region	The ecological region of the respondent's habitation-mountain, Hill, and Tarai
Type of place of participant	Participant's place of living at the interview time-urban, rural
Type of family	The family with 4 members considered a nuclear family, more than 5 members living together in a household is defined as extended family. Nuclear and extended family.
Wealth index	Used the 2022 NDHS wealth index combine and reorganized as poor, middle and rich.
Head of household	Self-reported person who control over household assets- male, female

Data Analysis

Data were analyzed using the statistical package for the social sciences (SPSS) 2016 version. Descriptive analysis was

conducted to describe the frequencies for each variable's value and the prevalence of mental disorders, while actual response counts are reported in numbers and percentages. Bivariate analysis was used to examine associations between the outcome variables and potential covariates. Finally, any variable associated with the outcome variable with a p-value of 0.05 in the bivariate analysis was further investigated for confounding by a multivariate binary logistic regression method to assess the independent association of the covariates with the outcome variable. The results were presented in terms of odds ratios, 95% confidence intervals, and p-values < 0.05.

Results

Descriptive Results with Characteristics of Participants and Prevalence of Mental Disorders

Table 2 shows the characteristics of participants and the prevalence of mental disorders in the studied population. The mean age of the study population was 29.99 years, with an SD of ±10.02. Of the total study population, nearly half of the participants were migrants, and among the migrants, 5% were told they had mental disorders by their doctor/healthcare worker. More than half of the participants reported a moderate health condition. The highest percentage (12%) of mental disorders was reported among the participants with poor health conditions compared to those with good (2%) and moderate (4%) health conditions.

The highest number of participants was in the age group of 20-29 years, and less than one-fifth were teenagers. The oldest age group (40-49) of participants was more mentally ill compared to other age groups. The majority (60%) of the studied participants were female, and a higher percentage of female participants reported mental health problems than men. More than one-third of the study participants were of the Janajati caste, and among the caste groups, the Brahmin/Chhetri caste group was more mentally ill compared to other caste groups. The majority of the participants were Hindu religion followers, and Hindu, Muslim, and Christian followers were more mentally unhealthy compared to Buddhists. One-fifth of the participants had not completed a single year of education, while only 3% of participants had completed a higher degree of education. The illiterate and higher educated were more likely to report mental illness compared to others.

The majority of the participants were married, and a higher percentage of married participants reported they had a mental health condition compared to singles. Nearly half of the participants were self-employed, less than one-fifth were unemployed, and the least (5%) were service holders. Five percent of service holders reported a mental health problem, which was higher than other occupational groups. More than half of the participants resided in urban areas, while nearly half of the interviewed participants were from the Terai region. The highest number of participants was from the Madheshi community, and mentally ill participants were in the Karnali province. More than half of the study participants belonged to an extended family, and more participants with mental disorders were from nuclear families. Nearly half of the participants were in poor families and were less likely to have mental disorders. The majority of households were headed by males, and there was no variation in mental health condition between male- and female-headed families.

Table 2. Demographic characteristics and prevalence of mental disorders among adult Nepali population aged 15-49 years

Characteristics			Mental disorders	
			No	Yes
		Total N (%)	N (%)	N (%)
Internal Migration				
	No	6816 (57)	6610 (97)	206 (3)
	Yes	5160 (43)	4916 (95)	244 (5)
Self-reported health				
	Good	4491 (38)	4417 (98)	74 (2)
	Moderate	6490 (54)	6231 (96)	259 (4)
	Poor	995 (8)	878 (88)	117 (12)
Age				
	15-19	2314 9(19)	2277 (98)	37 (2)
	20-29	3810 (32)	3681 (97)	129 (3)
	30-39	3190 (27)	3050 (96)	140 (4)
	40-49	2662 (22)	2518 (95)	144 (5)
Sex of respondent				
	Male	4806 (40)	4707 (98)	99 (2)
	Female	7170 (60)	6819 (95)	351 (5)
Ethnicity				
	Brahmin/Chhetri	3889 (32)	3700 (95)	189 (5)
	Janajati	4274 (36)	4158 (97)	116 (3)
	Dalit	1895 (16)	1817 (96)	78 (4)
	Madheshi	1478 (12)	1431 (97)	47 (3)
	Muslim	426 (4)	407 (96)	19 (4)
	Other	14 (1)	13 (93)	1 (7)
Religion				
	Hindu	10089 (84)	9700 (96)	389 (4)
	Buddhist	738 (6)	720 (98)	18 (2)

	Muslim	434 (4)	415 (96)	19 (4)
	Christian	370 (3)	354 (96)	16 (4)
	Other (Kirat)	345 (3)	337 (98)	8 (2)
Education level				
	No education	2383 (20)	2266 (95)	117 (5)
	Basic	4224 (35)	4087 (97)	137 (3)
	Secondary	4873 (41)	4700 (96)	173 (4)
	Higher	345 (3)	473 (95)	23 (5)
Marital status				
	Unmarried	3194 (27)	3126 (98)	68 (2)
	Married	8507 (71)	8149 (96)	358 (4)
	Other	275 (2)	251 (91)	24 (9)
Occupation				
	Unemployed	2314 (19)	2219 (96)	95 (4)
	Service	925 (8)	880 (95)	45 (5)
	Business	1094 (9)	1051 (96)	43 (4)
	Self-employed	5340 (45)	5126 (96)	214 (4)
	Manual worker	2293 (19)	2241 (98)	52 (2)
	Other	10 (.1)	9 (90)	1 (10)
Province				
	Karnali	1561 (13)	1469 (94)	92 (6)
	Koshi	1825 (15)	1771 (97)	52 (3)
	Bagmati	1832 (16)	1769 (97)	63 (3)
	Lumbini	1786 (15)	1705 (95)	81 (5)
	Sudurpachhim	1596 (13)	1541 (97)	55 (3)
	Gandaki	1314 (11)	1276(97)	38 (3)
	Madheshi	2062 (17)	1995 (97)	67 (3)
Ecological region				
	Mountain	1030 (9)	986 (96)	44 (4)
	Hill	5275 (44)	5075 (96)	200 (4)
	Tarai	5671 (47)	5465 (96)	206 (4)

Place of residence				
	Urban	6530 (55)	6277 (96)	253 (4)
	Rural	5446 (45)	5249 (96)	197 (4)
Type of family				
	Nuclear	5525 (46)	5295 (96)	230 (4)
	Extended	6451 (54)	6231 (97)	220 (3)
Wealth quintal				
	Poor	5488 (46)	5299 (97)	189 (3)
	Middle	2354 (20)	2251 (96)	103 (4)
	Rich	4134 (34)	3976 (96)	158 (4)
Head of household				
	Male	8539 (71)	8231 (96)	308 (4)
	Female	3437 (29)	3295 (96)	142 (4)

Internal Migration and Socio-Demographic Characteristics of Study Participants with Bivariate Odds Ratios (ORs)

Table 3 shows the results of bivariate logistic regression analysis and its association with the outcome variable and covariates. The results indicate evidence of an association of internal migration, self-reported health condition, respondent's age, sex, caste/ethnicity, education, current marital status, living province, and family type with mental disorders.

Odds of mental disorders were found to be high in migrants compared to non-migrant participants. Participants with a poor health condition are nearly nine times more likely to have mental disorders than those with a good health condition. Females are more likely to suffer from mental disorders than male participants. Odds increase with the aging of participants. Mental disorders are more than three to two times more likely to increase compared to teenagers. In the caste/ethnic groups, Brahmin/Chhetri are more likely to have mental disorders compared to other caste groups, but Dalit and Muslim were not statistically significant. Higher education seems to be protective compared to illiteracy. Current marital status is also associated with mental health. Married and other (divorced and widowed) marital status participants are more vulnerable to having mental disorders compared to unmarried. Residents of Karnali province and poor participants are more likely to have mental disorders compared to other provinces and middle-income participants. There is no clear association with ecological region, residence, head of household, and mental disorder.

Table 3. Results of bivariate analysis of covariates and their association with mental disorders of the study participants aged 15-49 years

Characteristics		Mental disorders		Odd (95% CI)	P-value
		No	Yes		
		Number (%)	Number (%)		
Internal Migration					
	No	6610 (97)	206 (3)	1	
	Yes	4916 (95)	244 (5)	1.59 (1.31-1.92)	0.00
Self-reported health					
	Good	4417 (98)	74 (2)	1	
	Moderate	6231 (96)	259 (4)	2.48 (1.91-3.22)	0.00
	Poor	878 (88)	117 (12)	7.95 (5.89-10.73)	0.00
Age					
	15-19	2277 (98)	37 (2)	1	
	20-29	3681 (97)	129 (3)	2.15 (1.49-3.12)	0.00
	30-39	3050 (96)	140 (4)	2.82 (1.95-4.07)	0.00
	40-49	2518 (95)	144 (5)	3.51 (2.44-5.07)	0.00
Sex of respondent					
	Male	4707 (98)	99 (2)	1	
	Female	6819 (95)	351 (5)	2.44 (1.95-3.06)	0.00
Ethnicity					
	Brahmin/Chhetri	3700 (95)	189 (5)	1	
	Janajati	4158 (97)	116 (3)	.54 (0.43-0.69)	0.00
	Dalit	1817 (96)	78 (4)	.84 (0.64-1.10)	0.20
	Madheshi	1431 (97)	47 (3)	.64 (0.46-0.89)	0.00
	Muslim	407 (96)	19 (4)	.91 (0.56-1.48)	0.71
	Other	13 (93)	1 (7)	1.50 (0.19-11.57)	0.69
Education level					
	No education	2266 (95)	117 (5)	1	
	Basic	4087 (97)	137 (3)	.64 (0.50-0.83)	0.00
	Secondary	4700 (96)	173 (4)	.71 (0.56-0.90)	0.00
	Higher	473 (95)	23 (5)	.94 (0.58-1.48)	0.00
Marital status					
	Unmarried	3126 (98)	68 (2)	1	
	Married	8149 (96)	358 (4)	2.02 (1.55-2.62)	0.00
	Other	251 (91)	24 (9)	4.39 (2.71-7.12)	0.00
Occupation					
	Unemployed	2219 (96)	95 (4)	1	
	Service	880 (95)	45 (5)	1.19 (0.83-1.71)	0.33

	Business	1051 (96)	43 (4)	.95 (0.66-1.38)	0.80
	Self-employed	5126 (96)	214 (4)	.97 (0.76-1.24)	0.84
	Manual worker	2241 (98)	52 (2)	.54 (0.38-0.76)	0.00
	Other	9 (90)	1 (10)	2.59 (0.32-20.69)	0.36
Province					
	Karnali	1469 (94)	92 (6)	1	
	Koshi	1771 (97)	52 (3)	.48 (0.34-0.69)	0.00
	Bagmati	1769 (97)	63 (3)	.56 (0.41-0.78)	0.00
	Lumbini	1705 (95)	81 (5)	.73 (0.55-1.03)	0.07
	Sudurpachhim	1541 (97)	55 (3)	.57 (0.40-0.80)	0.00
	Gandaki	1276(97)	38 (3)	.47 (0.32-0.69)	0.00
	Madheshi	1995 (97)	67 (3)	.53 (0.38-0.74)	0.00
Ecological region					
	Mountain	986 (96)	44 (4)	1	
	Hill	5075 (96)	200 (4)	.88 (0.63-1.23)	0.46
	Tarai	5465 (96)	206 (4)	.84 (0.60-1.17)	0.32
Place of residence					
	Urban	6277 (96)	253 (4)	1	
	Rural	5249 (96)	197 (4)	.93 (0.77-1.12)	0.46
Type of family					
	Nuclear	5295 (96)	230 (4)	1	
	Extended	6231 (97)	220 (3)	.81 (0.67-0.98)	0.03
Wealth quintal					
	Poor	5299 (97)	189 (3)	1	
	Middle	2251 (96)	103 (4)	1.28 (1.00-1.63)	0.04
	Rich	3976 (96)	158 (4)	1.11 (0.89-1.38)	0.32
Head of household					
	Male	8231 (96)	308 (4)	1	
	Female	3295 (96)	142 (4)	1.15 (0.94-1.41)	0.17

Table 4 shows the results of the multivariate logistic regression analysis that adjusted all covariates with a p-value <0.05 in the bivariate logistic regression analysis. Occupation, ecological region, place of residence, and head of household were excluded from the multivariate logistic regression analysis.

Six out of ten covariates showed evidence of an independent association with mental disorders in the multivariate logistic regression analysis when all other potential variables were adjusted. The majority of covariates' odds decreased in the multivariable logistic regression analysis. Odds of caste/ethnicity, education, family type, and wealth status increased, but Madhesh, basic level of education, type of family, and middle-income status were found insignificant at <0.05 in the

multivariate analysis. Internal migration, marital status, and type of family were not seen as independent factors for increasing the risk of mental disorders in the analysis.

The self-reported health condition is strongly associated with mental health. Participants with poor and moderate health conditions are almost six and two times more likely, respectively, to have mental disorders. Similarly, the age of the participants was associated with mental disorders. There was a strong dose-response relationship between age and mental disorders: the older the participant, the higher the risk of mental disorders, with the oldest participant age group (40-49) over three times as likely and the age group 30-39 twice as likely to have a risk of mental disorders compared to teenagers (15-19 years). Odds for female participants were nearly two times higher than for male participants.

Among the caste/ethnicity groups, the Janajati caste group was found to be more protective against mental disorders compared to other caste/ethnicity groups. Married participants were less likely to have mental disorders compared to unmarried, but the odds were not statistically significant. Odds for the Karnali province continued to be high compared to other provinces in both bivariate and multivariate logistic regression analyses, and they were statistically significant except for Lumbini and Madhesh provinces. The odds for middle and rich income participants were high but statistically insignificant compared to the rich category.

Table 4. Independently associated factors with mental disorders: a multivariate logistic regression model with adjusted odds ratios and 95% confidence interval

Characteristics		Mental disorders		aOdd (95% CI)	P-value
		No	Yes		
		Number (%)	Number (%)		
Internal Migration					
	No	6610 (97)	206 (3)	1	
	Yes	4916 (95)	244 (5)	.98 (0.78-1.22)	0.86
Self-reported health					
	Good	4417 (98)	74 (2)	1	
	Moderate	6231 (96)	259 (4)	2.20 (1.67-2.88)	0.00
	Poor	878 (88)	117 (12)	5.74 (4.18-7.80)	0.00
Age					
	15-19	2277 (98)	37 (2)	1	
	20-29	3681 (97)	129 (3)	1.95 (1.27-3.00)	0.00
	30-39	3050 (96)	140 (4)	2.55 (1.57-4.12)	0.00
	40-49	2518 (95)	144 (5)	3.03 (1.84-5.01)	0.00
Sex of respondent					
	Male	4707 (98)	99 (2)	1	
	Female	6819 (95)	351 (5)	2.20 (1.70-2.83)	0.00
Caste/Ethnicity					
	Brahmin/Chhetri	3700 (95)	189 (5)	1	
	Janajati	4158 (97)	116 (3)	.66 (0.51-0.85)	0.00

	Dalit	1817 (96)	78 (4)	.98 (0.73-1.32)	0.90
	Madheshi	1431 (97)	47 (3)	.86 (0.56-1.31)	0.49
	Muslim	407 (96)	19 (4)	1.32 (0.75-2.33)	0.33
	Other	13 (93)	1 (7)	2.02 (0.25-16.09)	0.50
Education level					
	No education	2266 (95)	117 (5)	1	
	Basic	4087 (97)	137 (3)	1.12 (0.84-1.49)	0.49
	Secondary	4700 (96)	173 (4)	1.54 (1.12-2.11)	0.00
	Higher	473 (95)	23 (5)	1.89 (1.12-3.22)	0.01
Marital status					
	Unmarried	3126 (98)	68 (2)	1	
	Married	8149 (96)	358 (4)	.99 (0.69-1.42)	0.96
	Other	251 (91)	24 (9)	1.60 (0.91-2.84)	0.10
Province					
	Karnali	1469 (94)	92 (6)	1	
	Koshi	1771 (97)	52 (3)	.56 (0.38-0.82)	0.00
	Bagmati	1769 (97)	63 (3)	.68 (0.47-0.08)	0.04
	Lumbini	1705 (95)	81 (5)	.78 (0.56-1.11)	0.17
	Sudurpachhim	1541 (97)	55 (3)	.60 (0.42-0.85)	0.00
	Gandaki	1276(97)	38 (3)	.48 (0.32-0.73)	0.00
	Madheshi	1995 (97)	67 (3)	.71 (0.46-1.09)	0.21
Type of family					
	Nuclear	5295 (96)	230 (4)	1	
	Extended	6231 (97)	220 (3)	.88 (0.72-1.07)	0.21
Wealth quintal					
	Poor	5299 (97)	189 (3)	1	
	Middle	2251 (96)	103 (4)	1.50 (1.14-1.97)	0.00
	Rich	3976 (96)	158 (4)	1.22 (0.94-1.58)	0.12

Discussion

To our knowledge, this is the first analysis of the 2022 NDHS dataset focusing on mental health and internal migration. The results of the analysis suggest that poor health condition, age, gender, education, province, and economic status of the participants were independent factors for the increasing risk of mental disorders in the Nepali adult population, while internal migration was not found to be independently associated with mental disorders in the study. After controlling for self-reported health condition, age, gender, ethnicity, education, marital status, province, type of family, and economic status, migrants had a lower risk of mental disorders than original residents. The prevalence of mental disorders observed (5%) in the present study is similar to the result (5.2%) of the National Mental Health Survey, Nepal 2020 [4]. A community-based cross-sectional study conducted during the early COVID-19 period in Nepal showed that 14% of the

respondents had anxiety, 7% had depression, and 5% had stress symptoms, which was a higher rate of any mental disorders than the present study [14]. The prevalence of mental disorders in the present study could differ because it was conducted in the general population, whereas the other study was conducted among sick people with fever who attended the hospital during the COVID period.

The present study showed that migrants were less likely (aOR=0.98, 0.78-1.22, p=0.86) to have a mental disorder than the original participants, which is similar to the results of a study conducted in China [5]; however, the present study's results were not found to be statistically significant.

The health condition of the participants was found to be an independent factor for increasing the risk of mental disorders in the present study. The odds of poor health condition were nearly six times more than those of good health condition (aOR=5.74, 4.18-7.80, p<0.001) when controlling for other covariates. The result of the present study was similar to that of a study conducted in Nepal during COVID-19 [14]. The study results showed that people with self-reported poor health conditions were more likely to have anxiety and depression. Similarly, another study conducted in China showed that the population with chronic health conditions (diabetes mellitus/hypertension) was more likely to have mental disorders compared to people with good health conditions [5].

The age of the participant was found to be a strong factor for developing the risk of mental disorders. The present study results showed that the older the age, the increased risk of mental disorders. A national mental health survey conducted in Nepal showed that adolescents were more likely to have mental disorders compared to the younger age group [4].

The present study results showed that female participants were more than two times as likely to have a risk of mental disorders. Our result is similar to that of a systematic review study, which showed that females were more vulnerable to mental illness compared to male participants [1].

Conclusion

This study was conducted using secondary data, and the study's hypothesis was that the internally migrated population is more vulnerable to mental health illness due to their lack of access to services in newly settled places. Our hypothesis is rejected by the study; however, new insights are revealed for further investigation and consideration. Our study showed that people with poor health conditions, women, and older citizens are more vulnerable to developing mental illness.

Acknowledgements and Ethical Considerations

Nepal Demographic and Health Survey (2022 NDHS) data was used for this analysis. We downloaded data from https://www.dhsprogram.com/data/available-datasets.cfm after registering as DHS data users. The DHS program granted us access to the data after reviewing our research proposal. We obtained written approval from the DHS program. We accepted the terms and conditions attached to the data sharing policy. The ethical approval for the survey was obtained by the ICF International Institutional Review Board (IRB) and the Ethical Review Board of Nepal Health Research Council.

Further approval for this study was not required since the data are available in the public domain.

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