Risk factors for depression among returnee migrants and non-migrants working adults in Nepal: A cross-sectional community based study.

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Abstract

Background: Mental health is a growing concern worldwide. It is not well understood whether Nepali workers, including international labour migrants from Nepal, are at higher risk of developing mental health problems. The purpose of our study is to determine the prevalence of and examine the risks factors for depression among returnee migrants and non-migrant working male adults in Nepal.

Methods: A cross-sectional survey of a probability-based sample of 725 participants was conducted in February 2020. The sample was comprised of two groups based on migration status: returning migrants and non-migrants. Logistic regression was applied to investigate factors associated with symptoms depression.

Results: The overall prevalence of depression was 10.1%. However, the prevalence of depression was lower (7%) among returnee migrants compared to non-migrants (13.7%). Participants in the lower income group were more at risk of depression (OR=5.38, 95% CI: 1.96-14.78) than those in the higher income group. Similarly, Buddhists and Christians were more likely to be depressed (OR=2.17, 95% CI: 1.02-4.64) than Hindus. Interestingly, participants having more than two children had a higher prevalence of depression (OR=5.14, 95% CI: 1.22-21.63) compared with those having no children. Unmarried participants were more likely to be depressed (OR=4.05, 95%, CI:1.10-14.93) than those who were married.

Conclusion: The working Nepali adult male population in Nepal, including returning migrants, is at risk of depression, but this risk is lower in those in the higher income group, returnee migrants, married, Hindus and those with no children. This study highlights the need to monitor and develop national policies to ensure the mental health of Nepali male adult population, including returnee migrants.

Key words: mental health, working population, labour, migration, depression

Introduction

An estimated 350 million people worldwide suffer from depression [1]. Although the prevalence of depression varies considerably within and between countries [2,3], more than two thirds (70%) of the global mental health burden occurs in Low and Middle Income Countries (LMICs) [4]. Mental health problems, including depression, are common in Nepal and a key contributor to morbidity [5,6]. Kecskes (2015) found that depression is highly prevalent in Nepal, accounting for the second highest rate of depression-related ''disability adjusted life years'' in the world [7].

Previous studies have shown a relationship between depression and work [8,9]. One review found that those working in male-dominated industries are at higher risk of depression than the general population [10]. Low income is a commonly reported risk factor for depression [11-13]. Also, people working in another country, so called migrant workers, experience many migration-related stressors that affect their mental health [14,15]. Factors that have been shown to be associated with depression among such workers include religious beliefs, marital status and number of children [16, 17]. A better understanding of the prevalence of depression among working men could inform the development of appropriate policies and tailored workplace mental health interventions. However, to date, little research has examined the risk factors for depression among male adult population in Nepal. This cross sectional survey was undertaken to examine the risks factors for depression among male adults in Nepal.

Methods

Study design and sample

A cross-sectional study using multi-stage sampling was conducted among adult male Nepali workers -non-migrants and returnee migrants. The study was conducted in Madi Municipality of Chitwan district, which is located in southern Nepal. The study site was chosen based on the high prevalence of labour out migration. Returning migrants were defined as Nepali citizens of 18 years or older age who had worked outside Nepal, mainly in the Middle East, South East Asia and other Asian countries, for more than six months and who returned to Nepal during the study period. Returning migrants who had worked in India, Europe, Canada or Australia were excluded from the study. The key reason for exclusion of migrants who returned from Europe, Canada and Australia was their high educational level, high income and higher skillful jobs [18]. The work environment and risk perceptions of workers who worked in developed countries might be different from those individuals who worked in the Gulf, South East Asia and other Asian countries [19]. Similarly, Indian migrants were excluded from this study due to the seasonal nature of migration and the difficulty of identifying them, as well as the fact that their characteristics and risk perceptions might differ from those of migrants who were enrolled in our study. Non-migrants were defined as Nepali citizens 18 years or older age, working in Nepal who had never migrated for work abroad.

The sample size was determined based on an estimated prevalence of depression of 24.3% in Low and Middle Income Country (LMICs) populations, with a 5% margin of error, and the confidence interval was set at 95% [20]. After adjusting for a non-response rate of 20%, the total sample size was 725.

Sampling process

We used a multi-stage sampling method to select a representative sample from the study population. In the first stage, Madi Municipality of Chitwan district was purposively selected based on its high rate of out-migration for work. As no official records of returnee migrants in the municipality or at the ward level were available, we undertook a mapping exercise to estimate the number of returnee migrants. In the second stage, four wards of Madi Municipality were randomly selected for household listing. Out of 4463 households, male workers from 1743 households had migrated for work abroad and male workers from 2720 households had never migrated. Male workers were categorized into two groups: (a) migrants (returnee migrants) and (b) non migrants (never migrated) to determine the required sample size for each sub group. Although individuals from 1743 households had migrated for work abroad, very limited were returned home during study period. Finally, all returnee migrants who met eligible criteria were selected for study, while non-migrants were randomly selected by a computer-based random selection technique.

Survey instruments

A previously validated questionnaire [21] was used to collect data on socio-demographic, migration-related, and mental health-related measures and characteristics of the participants. The questionnaire included 18 questions regarding personal characteristics and six migration related questions. Thirteen variables were pre-selected for inclusion in the multivariate analysis, including age (classified into three different groups), ethnicity, religion, education, marital status, number of children, family size, work hours, income, area of land, household asset index, migration status and health insurance. The focus of this study was on a single outcome variable: having had an

experience of depression in last two weeks. A 21-item questionnaire Beck Depression Inventory (BDI-21) was used to assess mental disorders (i.e. depressive disorder). The BDI-21 was developed by the World Health Organization (WHO) to improve detection of mental health disorders in the primary health care setting in low and middle income countries, and it is often used in academic and clinical settings [22]. In Nepal, the BDI-21 has been validated for detection of depression in the primary healthcare setting [21]. A pilot study was conducted with returnee migrants in a similar locality, and questions and or words found to be difficult to understand were modified.

Data collection procedures

Twelve trained data enumerators and three supervisors were recruited. The data enumerators had at least a bachelors' degree qualification in social science and health education. Preference was given to local candidates from the survey districts who were familiar with the local context and who spoke local languages. Three days of training was provided to the data enumerators on the purpose of the study, tools, methods, ethical matters and the recruitment process. The questionnaire was administered using pen-and-paper personal interviews (PAPI). Field supervisors were responsible for overseeing participant recruitment, data collection and checking and controlling data quality. The entire data-collection process was closely monitored by the supervisors.

Data cleaning and management

The data enumerators spot-checked completed survey questionnaire data to minimize errors and missing information. Data were also checked for completeness and consistency by the field supervisors during data collection, and survey data were

entered into EXCEL software by trained and experienced data entry clerks. All data were entered twice to check the quality of the data-entry process [23].

Data analysis

Statistical Packages for the Social Sciences (SPSS version 22) was used for data analysis. Frequencies and percentages were used to summarize the characteristics of the participants. The data from the BDI-21 questionnaire were analysed using a dichotomous score for each of the 21 questions. Participants with an overall score of >16 were defined as having a depressive disorder and those with a score of ≤ 16 were defined as having no depression [21]. In other words, the dependent variable was: depressive disorder (0=no depression and 1=depression). The independent variables were categorical, except for religion, marital status, family size, work hours, migration status and health insurance. The household assets index variable was constructed using 12 indicators of household possessions having a total score of 12. Household possession items were chosen from the list of The Nepal Demographic Health Survey (NDHS) 2016. All the items were equally weighted and made into a dichotomous variables assigning the code 0 or 1, with higher values reflecting more asset ownership. The score was divided into quintiles for the purpose of analysis; the lowest two and the highest two groups were collapsed to make three categories (low, middle and high income) of index ranking. Multivariate logistic regression models were fitted to assess the association of the outcome variable (depressive disorder) with various risk factors. Odds ratios were used to determine the strength of association for selected variables, with a cut off for statistical significance set at P=0.05.

Ethical consideration

The study protocol was approved by the Nepal Health Research Council (NHRC) (Ref.no: 490). Approval was also obtained from the local authority in the study site. Participation was voluntary and written informed consent was obtained from all study participants. A participant information sheet written in Nepali was provided to study participants, with information about the purpose of the study, confidentiality and anonymity.

Results

Socio-demographic characteristics of participants

The total number of workers who participated in this study was 725, of whom, 372 (51.3%) were migrants (returnee migrants) and 353 (48.7%) were non-migrants. The response rate was 96%. The mean age of the study participants was 37.5 years, ranging from 18 to 59 (SD=9.63). The vast majority of participants were Hindu (87.3%) and married (91.4%), and over half (56.8%) had 1-2 children and had a secondary/SLC level of education (58.5%) (Table 1). In terms of caste ethnicity, (43.4%) were Brahmin/Chhetri/Thakuri. Two thirds (65.5%) were semi-skilled or unskilled workers and the majority (69.2%) worked more than 50 hours per week. Just over half (53.1%) had health insurance, while almost half (44.3%) had an income of less than $267 (NRs 30,000) per month.

Multivariate logistic regression analysis was used to adjust for various factors and to find significant associations with depression status. The first model (Model I) was applied controlling for only five variables: age, ethnicity, religion, education and marital status. When controlling for five variables, religion was significantly associated

with depression (P=0.036). Buddhists and Christians (OR=2.17, 95% CI: 1.05-4.48) were more likely to experience depression compared to Hindus (Table 2).

The second model (Model II) was applied controlling for seven variables, including age, ethnicity, religion, education, marital status, number of children and family size. Three variables were statistically significantly associated with depression: having >2 children (OR=6.11, 95% CI: 1.48-25.14) was significantly associated with being depressed, compared to those with children. Similarly, marital status and religion were associated with depression status (Table 2). Participants who were unmarried (OR=3.98, 95% CI: 1.13-14.05) were significantly more likely to experience depression compared to those who were married, and Buddhists and Christians (OR=2.26, 95% CI:1.09-4.70) were more likely to experience depression compared to Hindus.

The third model (Model III) was used to adjust for all factors significantly associated with depression. Four statistically significant variables were associated with depression in this model (Table 2). Overall, income level was significantly associated with depression (P=0.004). Study participants who were in the lower income groups, $267 (NRs. <30,000) [OR=5.38, 95% (1.96-14.78)] were significantly more likely to be classified having depression, compared to those in higher income groups $356 (NRs. >40,000). Similarly, number of children was significantly associated with depression (P=0.026). Study participants who had > 2 children were more likely to have depression compared to those who had no children (OR=5.14, 95% CI: 1.22-21.63). Marital status and religion were also associated with to depression status. Participants who were unmarried were significantly more likely to be classified as having depression compared to those who were married (OR=4.05, 95% CI: 1.10-14.93) and Buddhists and Christians were more likely to experience depression compared to Hindus (OR=2.17, 95% CI: 1.02-4.64).

Discussion

The overall prevalence of depression among participants in this study was 10.1 %; it was, higher (13.7%) among non-migrants than among returnee migrants (7%). Due to a lack of prior studies on the prevalence of depression in Nepal using the BDI, our findings can only be compared with those of studies using different survey tools in Nepal and other countries. Furthermore, many earlier studies focused solely on mental health disorders, and these studies often used a range of mental-health related questions and scales.

The prevalence of depression we found (10.1%) is comparable to that reported in a recent pilot study (13.2%) of a national mental health survey in Nepal [5], a study of cross-border Nepalese migrants (13.5%) [24], a cross sectional study among Nepalese adults aged 18-65 years (11.7%) [6] and studies of non-Nepalese populations, including India (10.6%) [25], Spain (11.3%) [26] and the United States (16 %) [27]. However, the prevalence of depression we found was slightly higher than that in the study recently conducted by Devkota et al., (2020) in Nepal [28] and about three fold higher than the national prevalence of (2.7%) in India [29] and the estimated national prevalence rate (3.2%) in Nepal [1]. One possible explanation as to why the prevalence of depression varies across various studies is the use of different instruments to measure mental health and the use of different cut points in the analyses.

In the multivariate analysis, depression was associated with a lower level of income (Table 2). Workers who earned <$267 (NRs. <30,000) per month were more likely to experience depression than those who earned >$356 (> NRs. 40,000) per month. Psychological distress, including depression, has been associated with low income in

prior studies [30, 31]. A low income is a commonly reported risk factor for depression [11-13, 32, 33] although one study of Cambodian migrants in Thailand found that those with a higher income were more likely to experience depression [34]. One plausible reason for depression in those migrants with a higher income is that migrant workers had jobs with long working hours and without a break, and so had less time for rest, leisure and social relationships [11].

In our study, having more number of children was statistically associated with depression status. For participants who had more than two children were likely to experience depression, compared to those participants who had no children. In contrast, Donato et al. (2020) found that having more children in the household was associated with a slightly lower risk of depression [35].

We also found an association between marital status and depressive disorder (Table 3) such that unmarried people were more likely to have depression compared to married people. This finding differs from that of a previously published report [36].

We also found a significant relationship between religion and depression status, with a higher rate of depression among participants of Buddhist or Christian religious background than those with Hindu background. However, Xu and colleagues (2020) found that Buddhist respondents reported lower levels of depressive symptoms compared to non-Buddhist counterparts in a study of married women in Thailand [37]. Possible reasons for a higher prevalence of depression among Buddhist or Christian religious group in our study could include a lower of practicing yoga, mantra and meditation. Religion could play an important role in many situations, as religious beliefs and practices influence mental health and wellbeing [16, 38, 39] as documented in prior studies.

Strengths and limitations

To the best of our knowledge, this study represents one of the first community-based studies of the mental health-migration relationship, the health of returned migrants and non-migrants in Nepal. Hence, this study adds to the literature on mental health inequalities among migrants and non-migrants in low and middle-income countries. Strengths of our study are that it had an adequate sample size (n=725) and a high response rate (> 96%). Moreover, this study used validated tools to measure mental health outcome. However, our study also had several limitations. First, this was a cross-sectional study and it is impossible to establish cause-effect relationships between depression and the various socio-economic factors. Second, this study was carried out only in Madi municipality of Chitwan district, and the findings cannot be generalized to other settings in Nepal. Third, our study population was composed only of men and our findings are generalizable only to the male populations of selected migrant-sending communities in Nepal. Further, there may be differences in the ways in which returned migrants and non-migrants perceive their mental health.

Conclusion

The prevalence of depression was higher among non-migrants, compared to returnee migrants. The research found that socio-economic factors are strong predictors to depression among the study population. Our study also provides a framework for future longitudinal studies to examine potential risks factors for depression. World Health Assembly (WHA) resolution 61.17 highlighted the need to promote migrants health at national and international level, however, our study indicate to focus on promotion of

mental health and well-being not only focusing on migrant workers but also to adult

working in Nepal.

Abbreviations

BDI: Beck Depression Inventory

IOM: International Organization for Migration

ISERN: Institute for Social and Environmental Research

LMICs: Low and Middle Income Country

NDHS: Nepal Demographic Health Survey

NHRC: Nepal Health Research Council

PAPI: Pen-and-Paper Personal Interviews

SPSS: Statistical Packages for the Social Sciences

WHA: World Health Assembly

WHO: World Health Organization

Declarations

Ethics approval and consent to participate:

Ethical approval was obtained from the Ethical Review Board of Nepal Health Research Council (NHRC). A written informed consent was obtained from each respondent before data collection. Participants were informed about their voluntary participation and ensured the protection of privacy and confidentiality.

Consent for publication:

Not Applicable.

Availability of data and materials:

The datasets used for this study are available from the corresponding author on reasonable request.

Competing interests:

The authors declare that they have no competing interests.

Funding:

Authors' contributions:

PA conceived, designed the study. PA obtained the funding. PA implemented the study in the field with mentoring support from DJG and ALR. PA undertook data collection mobilizing enumerators. PA analyzed the data, interpreted the findings and prepared the first draft. HRD, ALR and DJG provided their inputs for finalization of manuscript. All authors read and approved the final manuscript.

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Table 1. Descriptive variables used in the analysis of depression and migration (n=725 adult males)

Measures	Mean	SD	Min	Max
Depression (Yes/No)	.01	.30	0	1
Labor Migrants (Yes/No)	.49	.50	0	1
Income/Remittance (NRP)	38,527	28,487	2,000	230,000
Health Insurance (Yes/No)	.47	.57	0	1
Age in years	37.57	9.63	18	59
Education				
Primary or No Education (Yes/No)	.29	.45	0	1
Secondary (Yes/No)	.58	.49	0	1
Higher (Yes/No)	.12	.33	0	1
Caste & Ethnicity				
Brahmin & Chhetri (yes/No)	.44	.50	0	1
Jana Jaati (Yes/No)	.43	.49	0	1
Dalit (Yes/No)	.14	.35	0	1

Religion				
Hindu (Yes/No)	.88	.32	0	1
Others (Yes/No)	.11	.32	0	1
Married (Yes/No)	.09	.28	0	1
Children (Yes/No)	.85	.36	0	1
Occupation				
Semi-skilled (Yes/No)	.43	.49	0	1
Unskilled (Yes/No)	.22	.42	0	1
Service or Business (Yes/No)	.21	.41	0	1
Agriculture (Yes/No)	.13	.34	0	1
Wealth Index	5.70	2.63	0	12

Table 2: Multivariate logistic regression models of depression among 725 returnee migrants and non-migrants working adults in Nepal

Variable	Depression					
	Odds ratio (95% CI)	p-value	Odds ratio (95% CI)	p-value	Odds ratio (95% CI)	p-value
	Model I		**Model II**		**Model III**	
Demographic and Socio-economic characteristics						
Wealth Index						
Rich	-------------		-------------		1.0	
Middle	-------------		-------------		0.89 (0.43-1.87)	0.766
Poor	-------------		-------------		1.19 (0.48-2.93)	0.706

Health insurance					
Yes	------------		------------	1.0	
No	------------		------------	1.19 (0.65-2.18)	0.569
Income					**0.004**
>40000 ($356)	------------		------------	1.0	
30000-40000 ($267-$356)	------------		------------	1.80 (0.73-4.44)	0.204
<30000 ($267)	------------		------------	5.38 (1.96-14.78)	**0.001**
Occupation					
Service/Business	------------		------------	1.0	
Agriculture	------------		------------	1.20 (0.50-2.88)	0.679
Semi-skilled	------------		------------	0.76 (0.28-2.11)	0.600
Unskilled	------------		------------	1.48 (0.60-3.67)	0.393
Migration status					
Non-migrants	------------		------------	1.0	
Migrants	------------		------------	2.58 (0.93-7.10)	0.068
Number of children					
No Children	-----------		1.0	1.0	
1-2 Children	-----------		3.32 (0.87-12.71)	0.080	3.35 (0.85-13.29)
> 2 Children	-----------		6.11 (1.48-25.14)	**0.012**	5.14 (1.22-21.63)
Age (n=725)					
< 30 years	1.0		1.0	1.0	
30-39 years	1.28 (0.57-2.87)	0.547	0.83 (0.35-1.94)	0.665	1.08 (0.45-2.57)
40+ years	1.63 (0.74-3.60)	0.222	0.79 (0.32-1.92)	0.587	0.97 (0.38-2.47)
Ethnicity (n=725)					
B/C/T	1.0		1.0	1.0	
Dalit	1.28 (0.61-2.70)	0.512	1.25 (0.58-2.66)	0.569	0.96 (0.43-2.16)
Janajati/Madheshi	0.83 (0.44-1.60)	0.594	0.82 (0.43-1.58)	0.559	0.65 (0.32-1.31)

Religion (n=725)						
Hindu	1.0		1.0		1.0	
Buddha/Christian	2.17 (1.05-4.48)	**0.036**	2.26 (1.09-4.70)	**0.029**	2.17 (1.02-4.64)	**0.045**
Education (n=725)						
Higher Education	1.0		1.0		1.0	
Secondary/SLC	0.91 (0.37-2.21)	0.829	0.88 (0.36-2.16)	0.774	0.72 (0.28-1.86)	0.500
No Edu./Primary	2.17 (0.84-5.61)	0.111	1.91 (0.73-5.01)	0.191	1.08 (0.37-3.15)	0.895
Marital status (n=725)						
Married	1.0		1.0		1.0	
Unmarried	2.08 (0.83-5.23)	0.120	3.98 (1.13-14.05)	**0.032**	4.05 (1.10-14.93)	**0.035**

Note: BDI cut of score 16:17 (or 17 or more) is considered to indicate depression. [Score 0-16=No depression, 17 through highest=Depression]

B/C/T=Brahmin/Chhetri/Thakuri