Prevalence of Mental Disorders among Older People in Nepal: A Systematic Review

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ABSTRACT

Background

There has been limited research into the prevalence of mental disorders amongst older adults in developing countries. Developing countries such as Nepal are undergoing significant demographic changes with an increasing number and proportion of older persons.

Objective

This systematic review reports the prevalence of mental health disorders amongst the elderly in Nepal.

Method

Databases searched were PubMed, CINAHL, Scopus and PsycINFO. A hand search for relevant articles appearing in reference lists and previously identified research was also undertaken.

Result

Of the 26 studies (32 articles) included most were community and aged-care home -based studies measuring depression. The prevalence of depressive symptom cases ranged from 25.5% to 60.6% in the community, 17.3% to 89.1% in aged-care facilities and 53.2% to 57.1% in hospital settings. The prevalence of depressive disorders in similar settings varied between 4.4% (in community) to 53.2% (in hospital). The prevalence of anxiety symptom cases ranged from 21.7% to 32.3%. Psychosis, alcohol dependence and dementia were other identified disorders amongst the elderly. Disordered symptom cases are more prevalent in aged-care facilities than in community settings and mental disorders are higher for hospital-based studies compared to community settings.

Conclusion

This review identified a higher prevalence of depression amongst the elderly in Nepal compared to studies conducted in developed countries. The high rates of reported prevalence among the elderly warrant the need to develop more effective public health and welfare approaches to prevent, treat and manage the mental disorders among this vulnerable population.

KEY WORDS

Aged, Anxiety, Depression, Elderly, Mental disorders, Nepal, Prevalence

INTRODUCTION

Global population ageing, due to fertility decline and rising life expectancy, has extensive consequences.[1] In 2017, an estimated 962 million people were aged 60 or over comprising 13% of the global population which is predicted to rise to 1.4 billion (16.5%) by 2030 and 2.1 billion (20%) by 2050.[2] Population ageing is producing changes to demographics in developing countries with Nepal recently experiencing a sharp rise in the relative and absolute size of its elderly population.[3] A child born in Nepal in 2011 has a predicted life expectancy of 66.6 years, which is almost 17 years longer than in 1981.[4] Census data shows an increase in the proportion of older people from 5% in 1952/54, to 6.5% in 2001 and 8.1% in 2011, with a 2016 survey estimate of 9.9%.[5] In absolute terms, the elderly population increased from 857,061 in 1981 to 2,154,410 by 2011.[6] In 2030, the aged population is projected to be 3,336,000, accounting for more than 10% of the total population.[7]

Mental disorders in the elderly are a serious public health concern with the aged population having a higher prevalence of mental disorders.[8,9] The 2010 Global Burden of Disease Study identified that mental and substance use disorders accounted for 22.9% of all Years Lived with Disability (YLDs) and 7.4% of all Disability Adjusted Life Years (DALYs).[10] According to the WHO, 15% of older people (≥60 years) live with a mental disorder accounting for 6.6% of the total DALYs amongst older adults.[11] Identified mental disorders amongst the elderly include depression, anxiety, dementia, cognitive impairment, post-traumatic stress, and substance use.[12-23] Mental disorders often develop with co-morbidities and are associated with negative health outcomes.[24,25] Mental health problems amongst the elderly are often undiagnosed and untreated in part due to stigma and discrimination.[26,27]

Community-based studies in Nepal report higher prevalence of psychiatric morbidities for persons 15 years and older; with a prevalence of over 35%.[28,29] Lam et al. observed a 21.3% prevalence of depression among adults (≥18 years) and Risal et al. reported an adult (≥18 years) prevalence of anxiety and depression of 22.7% and 11.7% respectively.[30,31] Bishwajit et al. observed a higher rate of self-reported depression for Nepalese adults (>18 years) of 49.9% compared to Bangladeshi (39.0%) and Indian (17.7%) adults.[32] Hospital inpatients have a higher prevalence, with Shyangwa et al. reporting a 31.7% prevalence of neuropsychiatric illnesses.[33]

There has been limited research into the prevalence of mental disorders amongst older adults in developing countries. Elderly people in Nepal have less access to integrated health services and limited social security support in later life.[34] In addition, the devastating Nepal earthquake of 2015 had a negative impact on older peoples' psychosocial health and well-being with reduced availability of support and treatment options.[35] Relevant research is generally not population-wide, with small studies focussing on individual villages, cities, aged-care facilities and health care institutions. Whilst these studies provide useful subpopulation information, they do not individually describe the prevalence of mental disorders in Nepal.

The present review addresses this shortcoming by undertaking a comprehensive review of mental health research among the elderly in Nepal focussing on the prevalence of mental disorders to inform public health initiatives.

METHODS

This review utilised the Preferred Reporting Items for Systematic Reviews and Meta-Analyses.[36] Databases searched were PubMed, CINAHL, Scopus and PsycINFO for all published articles between January 2000 and January 2018. Search terms were 'mental health' OR 'mental disorders' OR psychological OR 'well-being' OR 'quality of life' OR depress* OR psychiatr* OR anxiety OR stress AND older OR parents OR elderly OR elder OR aged OR ageing OR geriatric OR adult AND Nepal. A hand search for relevant articles appearing in reference lists and previously identified research was also undertaken.

Studies were included if they fulfilled the following criteria: study subjects' aged 50 years or older, original quantitative research reporting the prevalence of any mental disorder in Nepal and published in an English peer-reviewed journal. No restrictions were placed on sample size or study settings. Theoretical studies, editorials, commentaries and dissertations were excluded. To account for the cohort effect, studies published before the year 2000 were also excluded.

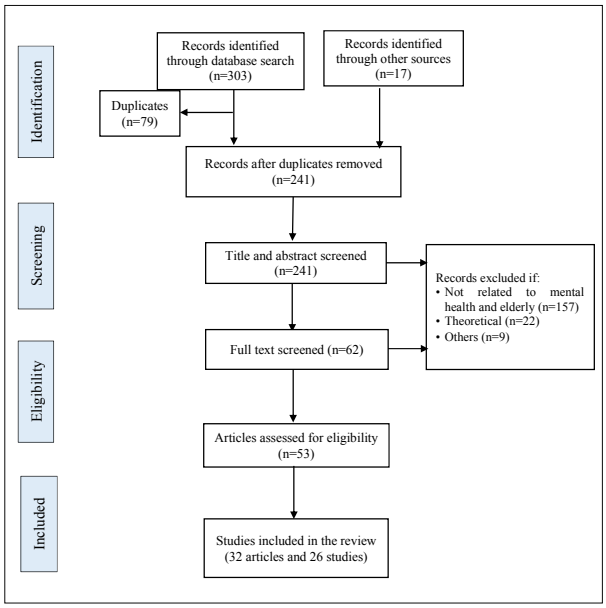

Figure 1. Flow diagram of studies identified, screened, assessed for eligibility, and included in this review

Figure 1 presents a flow diagram of the process by which studies were identified, screened, assessed for eligibility and included in this review. The literature search identified 303 articles with 17 additional articles located. After removal of duplicates, 241 articles were screened for title and abstract with 53 articles identified and assessed for eligibility, yielding 32 articles from 26 studies included in this review.

Study quality was assessed using the critical appraisal tool for prevalence studies developed by Loney et al.[37] This tool contains the following eight criteria: 1) adequate sampling; 2) unbiased sampling frame; 3) adequate sample size (>300); 4) standard measures of outcomes; 5) unbiased assessors of outcomes; 6) adequate response rate with refusals described; 7) prevalence presented with confidence intervals and by relevant subgroup analysis; and 8) study subjects and settings described and appropriate for the research question. For the third quality criterion (adequate sample size), sample size was also deemed adequate if it was calculated a priori or if the entire subpopulation was measured. The quality of the included articles was rated independently by two authors (by DKT and DV). Discrepancies were discussed and determined by consensus.

The first author extracted, cross-checked and reported data using a modified standardised data extraction form.[38] Table 1 presents participant characteristics, study settings, research design, sample size, mental disorders assessed, data collection tools/scales used and prevalence rates. Studies were categorised according to setting (community, aged-care facilities and hospital) and also separated into those reporting clinically relevant symptom cases (studies using screening scales) and those reporting clinically relevant levels of mental disorders based on ICD or DSM criteria. While no studies reported standard errors for prevalence estimates, we calculated and present confidence intervals (CIs) of the estimates based on the study data (see Table 1 and Table 2).

RESULTS

Methodological characteristics and study settings

Of the 26 studies, 20 had a cross-sectional design, and the remaining six were hospital record evaluations. Seven studies were community-based; four of which were conducted in urban/semi-urban areas of Kathmandu, while the remaining three were undertaken in the districts of Dhankuta, Dharan and Dolakha. In eight studies, participants were recruited from aged-care facilities (Kathmandu n=6, Devghat n=2) and nine studies were hospital based. One study compared the prevalence of depression between community and aged-care facilities,[66] with another comparing an aged-care facility to hospital inpatients.[67] Among the hospital-based studies, seven measured outpatients with the remaining three measuring inpatients. Four of the hospital-based studies were conducted in Tribhuvan University Teaching Hospital (TUTH), two in The Universal College of Medical Sciences teaching Hospital Bhairahawa and one each in BPKIHS Dharan, Manipal Teaching Hospital Pokhara and a private hospital in Pokhara.

Sample sizes ranged from 34 to 489 (100 to 489 in community settings; 78 to 203 in aged-care facilities and 34 to 257 in hospitals). An overall sample size of 4152 was identified across the studies, with 1746 community-based subjects, 1140 aged-care facility subjects and 1114 hospital subjects. In fourteen studies, participants were selected either by random sampling or included the whole population of the study setting. Female participants outnumbered males in 13 studies, while five studies did not provide any gender information. Mean age of participants ranged from 67.3 to 78.2 years (Table 1).

Assessment of mental health

A range of measures were used to assess mental health status with 22 studies measuring depression. Twelve studies used the Geriatric Depression Scale (GDS) to measure depressive symptoms of which four used the short 15-item version. Two studies used the Beck Depression Inventory (BDI).[64,67] Other assessments included loneliness,[50] anxiety,[61,67] and cognitive impairment.[69,76] Amongst the studies assessing anxiety, one used the Hamilton Anxiety Scale and the other the Beck Anxiety Inventory (BAI). Two studies used the Mini-Mental State Examination (MMSE) to assess cognitive function. Seven of the hospital-based studies used the International Classification of Disease tenth revision (ICD-10) to diagnose psychiatric disorders. Two community-based studies reported clinically relevant mental disorders with one using ICD-10,[41] and the other using DSM-III-R.[54] All studies used standard instruments, except Sapkota and Pandey who developed a novel stress scale.[45]

Prevalence among community living elderly

Prevalence of cases identified by depressive symptoms using the GDS among the community based studies ranged from 29.7% to 60.6%. Gupta et al.[41] diagnosed 18% of elderly participants with depressive disorder using ICD-10. Simkhada et al. reported a higher prevalence of depressive symptom cases for females (68.4%) compared to males (51.2%).[39] Gautam and Houde in a Kathmandu community-based study identified that 45.4% of older adults who lived with a married son had depressive symptoms.[46] Chalise and Rai reported a lower prevalence of 29.7% among older adults of Rai ethnicity in Kathmandu.[43] Chalise et al. reported a high prevalence of loneliness (68.7%) among the elderly in Kathmandu.[51] Sapkota and Pandey found that all participants in their study experienced stress with around 60% having moderate or severe stress.[45] Subedi et al. using the DSM-III-R found an 18% prevalence of any diagnosable psychiatric disorder with a 5.5% prevalence of both lifetime somatization and anxiety (Table 2).[54]

Table 1. Characteristics of included studies

SN	Author (Year)	Age (years)		Participants characteristics	Sample size	Scale (cut-off) Reference
		Inclusion	Mean (SD)			
Community-based study						
1	**Simkhada et al.**[39]	≥60	71.2 (8.4)	Semi-rural communities in Kathmandu	299 (164F)	GDS-15 (≥5)[40]
2	**Gupta et al.**[41]	≥60	68% in the age group of 60-69	Elderly people residing in Pakhribaas, Dhankuta	189 (81F)	ICD-10[42]
3	**Chalise and Rai**[43]	≥60	69.8 (5.7)	Rai ethnicity in Kathmandu	165 (79F)	GDS-30 (≥10)[44]
4	**Sapkota and Pandey**[45]	≥65	67% were in the age group of 65 to 75 years	Elderly living in an urban area of Dharan municipality	100 (61F)	Researcher constructed stress scale
5	**Gautam et al.**[46-49]	>60	69.9 (8.1)	Urban area (Kathmandu) - older adults aged ≥60 years who lived with at least one married son	489 (242F)	GDS-30 (≥10)[44]
6	**Chalise et al.**[50-52]	>60	68.9 (7.4)	Urban area (Kathmandu) - Newar and Chhetri ethnicity in Kathmandu	332 (168F)	Three-item loneliness scale[53]
7	**Subedi et al.**[54]	≥50	-	Jirel (Tibeto-Burman) ethnic group in Jiri Valley, Dolakha	182 (99F)	DSM-III-R Criteria Checklist
Aged-care home-based study						
8	**Gauli and Shrestha**[55]	≥60	78.2 (9.2)	Aged-care facility located in Devghat area	116 (116F)	GDS-15 (≥5)[40]
9	**Shrestha et al.**[56]	≥60	73.6 (8.2)	Elderly people in Pashupati Briddhashram (aged care Home) in Kathmandu	148 (78F)	GDS-15 (≥5)[40]
10	**Kafle et al.**[57]	≥60	-	Aged-care facility in Kathmandu	203 (133F)	ICD-10
11	**Chalise**[58]	≥60	73.7 (3.2)	Elderly adults residing in aged-care facility in Devghat area	180 (89F)	GDS-15 (≥5)[40]
12	**Ranjan et al.**[59]	≥65	-	Elderly adults residing in aged-care facility in Kathmandu	150 (85F)	GDS-30 (≥10)[44]
13	**Timalsina et al.**[60,61]	≥60	-	Elderly adults residing in aged-care facility in Kathmandu	173 (128F)	GDS-30 (≥10)[44], Hamilton Anxiety Scale[62]
14	**Choulagai et al.**[63]	≥60	-	Elderly adults residing in aged-care facility in Kathmandu	78 (38F)	GDS-30 (≥10)[44]
15	**Pradhan**[64]	>60	39.1% were ≥80 years	Elderly adults residing in aged-care facility in Kathmandu	92 (58F)	BDI[65]
Community-based and aged-care facility - comparative						
16	**Ghimire et al.**[66]	≥60	Aged-care acility: 76.0 (7.9), Community: 72.7 (8.1)	Elderly adults residing in aged-care facility in Chitwan and community sample	110 (55 from aged-care facility and 55 from community)	GDS-30 (≥10)[44]
Hospital-based and aged-care facility-comparative						
17	**Kumar et al.**[67]	≥65	Inpatients: 69.0 (4.6) & community: 69.4 (4.3)	Geriatric inpatients admitted to the Department of Internal Medicine of TUTH and elderly from aged-care facility in Kathmandu	65 (42 inpatients and 23 community dwellers from aged-care facility)	BDI (≥10) and BAI (≥8)[68]
Hospital-based Outpatients						
18	**Nepal et al.**[69]	≥60	67.3 (7.3)	Patients in psychiatric OPD in BPKIHS, Dharan	210 (107F)	MMSE[70] and ICD-10
19	**Aich et al.**[71]	≥60	33.9% in 60-64 years	OPD patients of Department of Psychiatry, Universal College of Medical Sciences-Teaching Hospital, Bhairahawa	257 (117F)	ICD-10
20	**Thapa et al.**[72]	≥65	69.7 (5.9)	Psychiatric OPD of Manipal Teaching Hospital, Pokhara	120 (62F)	ICD-10
21	**Khattri et al.**[73]	≥65	-	Patients attending psychiatric OPD in a private hospital in Western region of Nepal (Fewa City Hospital and Research Centre, Pokhara).	80 (34F)	ICD-10[74]

22	**Shakya[75]**	≥55	65	OPD patients of psychiatry department of BPKIHS, Dharan	100 (54F)	ICD-10
23	**Khattri and Nepal[76]**	≥65	-	Patients attending the Psychiatry, Medicine and General Practice OPDs of TUTH	100 79	MMSE (<24)[70] GDS-30 (≥10)[44]
24	**Koirala et al.[77]**	≥60	67.3 (6.3)	All new patients attended the psychiatric OPD of TUTH over the study period of one year	75	-
Inpatients						
25	**Dhungana et al.[78]**	≥60	-	All patients admitted in Psychiatry ward of TUTH Kathmandu, over three years from 2010 April to 2013 April	34 (18F)	ICD-10
26	**Aich et al.[79]**	≥60	42.8% were in the age group 60 to 64 years	Inpatients admitted in Department of psychiatry, Universal college of medical sciences teaching hospital Bhairahawa	138 (55F)	ICD-10

OPD: Outpatient department; F: Female; TUTH: Tribhuvan University Teaching Hospital; GDS: Geriatric Depression Scale; DSM-III-R: Diagnostic and Statistical Manual of Mental Disorders, 3rd ed., revised; ICD-10: International Classification of Disease, 10th revision; BPKIHS: B. P. Koirala Institute of Health Sciences; BAI: Beck Anxiety Inventory; BDI: Beck Depression Inventory; MMSE: Mini-Mental State Examination

Table 2. Prevalence of mental health disorders and symptom cases

Study	Mental disorder	n(cases)	Prevalence proportion [95% CI]
Simkhada et al.[39]	Depressive symptoms	175	0.61 [0.55, 0.66] Male: 0.51 [0.43, 0.60] Female: 0.68 [0.61, 0.76] Mild: 0.28 [0.23, 0.33] Moderate: 0.21 [0.16, 0.26] Severe: 0.12 [0.08, 0.15]
Gupta et al.[41]	Depressive disorder	34	0.18 [0.13, 0.23]
Chalise and Rai[43]	Depressive symptoms	49	0.30 [0.23, 0.37] Mild: 0.24 [0.18, 0.31] Severe: 0.05 [0.02, 0.09]
Sapkota and Pandey[45]	Stress	60	Mild: 0.40 [0.30, 0.50] Moderate: 0.51 [0.41, 0.61] Severe: 0.09 [0.03, 0.15]
Gautam et al.[46-49]	Depressive symptoms	222	0.45 [0.41, 0.50] Moderate: 0.26 [0.22, 0.30] High: 0.19 [0.16, 0.23]
Chalise et al.[50-52]	Loneliness	228	0.69 [0.46, 0.74]
Subedi et al.[54]	Psychiatric disorder	32	0.18 [0.12, 0.23]
Gauli and Shrestha[55]	Depressive symptoms	78	0.67 [0.59, 0.76] Mild: 0.24 [0.16, 0.32] Severe: 0.43 [0.34, 0.52]
Shrestha et al.[56]	Depressive symptoms	92	0.62 [0.54, 0.70] Mild: 0.53 [0.45, 0.61] Severe: 0.09 [0.04, 0.13]
Kafle et al.[57]	Depressive symptoms	96	0.47 [0.40, 0.54]
Chalise[58]	Depressive symptoms	104	0.58 [0.51, 0.65] Mild: 0.47 [0.39, 0.54] Moderate: 0.09 [0.05, 0.13] Severe: 0.02 [0.0, 0.04]
Ranjan et al.[59]	Depressive symptoms	71	0.47 [0.39, 0.55] Male: 0.48 [0.36, 0.60] Female: 0.47 [0.36, 0.58] Mild: 0.33 [0.26, 0.41] Severe: 0.14 [0.08, 0.20]
Timalsina et al.[60,61]	Depressive symptoms	126	0.73 [0.66, 0.79] Male: 0.62 [0.48, 0.76] Female: 0.77 [0.69, 0.84] Mild: 0.57 [0.49, 0.64] Severe: 0.16 [0.11, 0.22]
Choulagai et al.[63]	Depressive symptoms	40	0.51 [0.40, 0.62] Mild: 0.36 [0.25, 0.47] Severe: 0.15 [0.07, 0.23]

Pradhan[64]	Depressive symptoms	82	0.89 [0.83, 0.95] Mild: 0.24 [0.15, 0.33] Moderate: 0.36 [0.26, 0.46] Severe: 0.29 [0.20, 0.39]
Ghimire et al.[66]	Depressive symptoms	43 14 29	0.39 [0.30, 0.48] Community: 0.25 [0.14, 0.37] Aged-care: 0.53 [0.40, 0.66]
Kumar et al.[67]	Depressive symptoms	24 4	Inpatients: 0.57 [0.42, 0.72] Aged-care: 0.17 [0.02, 0.33]
	Anxiety symptoms	32 5	Inpatients: 0.76 [0.63, 0.89] Aged-care: 0.22 [0.05, 0.39]
Nepal et al.[69]	Depressive disorder Neurotic, stress related and somatoform disorders Alcohol dependence syndrome Dementia Bipolar affective disorder	77 29 27 24 17	0.37 [0.30, 0.43] 0.14 [0.09, 0.18] 0.13 [0.08, 0.17] 0.11 [0.07, 0.16] 0.08 [0.04, 0.12]
Aich et al.[71]	Psychosis Depression (recent) Alcohol dependence syndrome Anxiety disorders Dementia	71 39 27 25 23	0.28 [0.22, 0.33] 0.15 [0.11, 0.20] 0.11 [0.07, 0.14] 0.10 [0.06, 0.13] 0.09 [0.05, 0.12]
Thapa et al.[72]	Depressive disorder Anxiety disorders Schizophenia Dementia Alcohol dependence syndrome Bipolar affective disorder	32 28 16 15 14 7	0.27 [0.19, 0.35] 0.23 [0.16, 0.31] 0.13 [0.07, 0.19] 0.13 [0.07, 0.18] 0.12 [0.06, 0.17] 0.06 [0.02, 0.10]
Khattri et al.[73]	Alcohol dependence syndrome	4 3 1	0.05 [0.00, 0.10] Male: 0.07 [0.00, 0.14] Female: 0.03 [0.00, 0.09]
Shakya[75]	Mood affective disorders Depressive disorder Phobic, anxiety and obsessive compulsive disorders Substance use Organic (Dementia, delirium, seizure related)	46 39 22 19 12	0.46 [0.36, 0.56] 0.39 [0.29, 0.49] 0.22 [0.14, 0.30] 0.19 [0.11, 0.27] 0.12 [0.06, 0.18]
Khattri and Nepal[76]	Cognitive impairment Depressive symptoms Depressive disorder	21 42 41	0.21 [0.13, 0.29] 0.53 [0.42, 0.64] 0.52 [0.41, 0.63]
Koirala et al.[77]	Mood disorder Organic brain disorder Tension headache	23 21 7	0.31 [0.20, 0.41] 0.28 [0.18, 0.38] 0.09 [0.03, 0.16]
Dhungana et al.[78]	Depressive disorder Schizophrenia/PPD Organic (Dementia/delirium) Bipolar affective disorder	10 7 7 5	0.29 [0.14, 0.45] 0.21 [0.07, 0.34] 0.21 [0.07, 0.34] 0.15 [0.03, 0.27]
Aich et al.[79]	Depression Schizophrenia and other psychosis Alcohol dependence syndrome Mood disorder-mania Organic disorders (dementia/delirium) Anxiety and dissociative disorders	32 28 25 22 22 9	0.23 [0.16, 0.30] 0.20 [0.14, 0.27] 0.18 [0.12, 0.25] 0.16 [0.10, 0.22] 0.16 [0.10, 0.22] 0.07 [0.02, 0.11]

Prevalence among elderly living in aged-care facilities

Seven of the eight aged-care facility studies measured depression using the GDS. The prevalence of depressive symptoms in these studies ranged from 47.3% to 72.8%. Two studies in the Devghat area reported a prevalence of 67.2%,[55] and 57.8%,[58] with similar rates observed in Kathmandu.[56,59,61] Ghimire et al. observed a doubling of the rate of depressive symptoms for aged-care facility residents (52.7%) compared to community residents (25.5%).[66] One small study used the BDI and reported the highest prevalence (89.1%) of depressive symptoms.[64] Timalsina reported a 32.4% prevalence of anxiety using the Hamilton Anxiety Scale.[60]

Prevalence in hospital-based studies

Khattri and Nepal reported 53.2% of participants with depressive symptoms based on GDS among patients attending the Psychiatry, Medicine and General Practice OPDs.[76] The prevalence of depressive disorders amongst older adults attending a psychiatric OPD as measured by ICD-10 varied widely from 15.2% to 39%.[71,75] Nepal et al. found depression as the most common psychiatric illness

(36.7%) followed by neurotic stress, and somatoform disorders (13.8%), alcohol dependence syndrome (12.9%) and dementia (11.4%).[69] Similarly, in a retrospective evaluation of outpatients by Thapa et al. in Pokhara, depressive disorders (26.7%) were identified as the most common diagnosis.[72] Aich et al. reported a 27.6% prevalence for psychosis, 15.2% for depression, 10.5% for alcohol dependence syndrome, 9.7% for anxiety and 8.9% for dementia in Bhairahawa.[71] Khattri and Nepal reported 21% of geriatric OPD patients having cognitive impairment.[76]

Amongst geriatric inpatients, alcohol dependence in males and depressive disorder in females were the main psychiatric illness.[79] Kumar et al. using the BDI and BAI reported significantly higher depressive (57.1%) and anxiety (76.1%) symptoms for hospitalised inpatient elderly as compared to elderly living in aged-care facilities (21.7% and 17.3% respectively).[67]

DISCUSSION

The aim of this review was to provide a comprehensive overview of studies related to mental disorders for the elderly in Nepal. This is the first review of the prevalence of mental disorders amongst elderly in Nepal across different study settings and utilising a number of assessment tools. Depression was more frequently studied than any other mental disorder in studies based in community and aged-care facilities. There was significant variation in the reported prevalence of depressive symptom cases ranging from 29.7% in a community-based study among the Rai ethnicity,[43] to 89.1% for the elderly living in an aged-care facility in Kathmandu.[64] There were also variations in the prevalence of depressive disorders with the smallest rate (4.4%) in a community-based study,[54] and the highest rate (39%) for outpatients.[75] The prevalence rate of symptoms as measured by screening tools was higher in aged-care facilities than those reported in community-based studies. The higher prevalence in aged-care facilities could be due in part to perceived abandonment and loss of social connection. In addition, many aged-care facilities in Nepal may lack adequate resources including staff trained in mental health for older persons.[80] Mental disorders was higher for studies, which recruited elderly patients attending hospitals than community-based studies, which is consistent with findings of previous studies.[81,82] One reason aged-care residents and hospital patients have higher rates is due to comorbidities related to their general health.

This study identified a higher prevalence of depression amongst the elderly in Nepal compared to studies conducted in developed countries. A review of prevalence of depression among elderly Western populations reported that the prevalence of depressive symptom cases ranged from 5.0% to 49% in the community, 11% to 48% in institutions. The prevalence of major depression ranged from 0.9% to 9.4% in private households, and from 14% to 42% in institutions.[83] A meta-analysis of studies conducted in Western countries reported a 19.5% prevalence of depressive symptoms and 16.5% prevalence of lifetime major depression.[84] Similarly, the median prevalence rate of depressive disorders from 74 studies worldwide including developed and developing countries was 10.3%.[85] The prevalence of anxiety disorder among US older adults was only 11.4%,[16] compared to 22% in Nepal.[75] Bryant et al. found the prevalence of anxiety ranging from 1.2% to 15% in community samples, and from 1% to 28% in clinical settings in developed countries.[86] Another review reported the prevalence estimates of anxiety disorders in late age ranging from 3.2% to 14.2% in Western countries.[87]

The higher prevalence of mental disorders amongst elderly persons included in this review is similar to other South Asian countries such as India, Pakistan and Bangladesh.[85,88-91] A review of Indian research reported the prevalence of depression from 8.9% to 62.2% in community-based studies and from 42.4% to 72% in clinic-based studies.[92] The erosion of traditional family structures, inadequate social welfare, and lack of access to mental health care may contribute to higher rates of mental disorders in low-income countries like Nepal. The absence of traditional extended family living is a predictor of depression in the elderly.[93]

This review included a number of studies, which had methodological quality issues, which limited the ability to provide population-based prevalence estimates. Eight studies used convenience or purposive sampling with only four studies calculating an a priori sample size or had a sample size higher than 300. Few studies (n=6) had an adequate response rate and limited information was provided regarding refusals. No study in this review reported confidence intervals for the estimates with only a few providing sub-group analyses.

The prevalence estimates are also limited by the absence of a study using a nationwide sampling frame. Most studies were based in Kathmandu and other urban areas making the findings less generalisable. Since the prevalence of mental disorders are generally higher in rural areas compared to urban areas,[94,95] the reported prevalence is likely to underestimate the general prevalence in Nepal given that most of the studies were from urban areas.

This review reports a higher prevalence of (clinically relevant) symptom cases than mental disorders, which is consistent with other studies.[86,96] Few studies measured the prevalence of mental disorders in the community with none in aged-care facilities. Community studies using for example the DSM criteria may underestimate the prevalence due to missing clinically significant cases.[96]

This review is not without limitations. Some studies included in this review had relatively small sample sizes taken from

hospital settings, which may inflate prevalence rates. While studies were assessed for quality, this assessment was not used to determine eligibility for inclusion. This inclusive approach provides a comprehensive overview of elderly mental health in Nepal. There was a high heterogeneity among the studies with variation in study types, settings and mental health measures making a meta-analysis inappropriate for this review. Different articles arising from the same study were treated as a single entity to avoid duplication of estimates, however some studies conducted in aged-care facilities in Kathmandu and Devghat area have recruited from the same aged-care facilities with possible overlap of some participants.

The higher prevalence for the elderly in Nepal may indicate a lack of recognition and treatment of mental disorders, highlighting the importance of awareness of elderly mental health and wellbeing. Mental health amongst the elderly should be given priority in both health policy and evidence based practice. Efforts should be made to establish an appropriate referral mechanism and integrated care using appropriate screening tools and treatments. Special attention should be provided to the elderly living in aged-care facilities.

CONCLUSION

There is limited information regarding the spectrum of mental disorders among the elderly in Nepal. This review provides an overview of the prevalence of mental disorders amongst the elderly in Nepal and demonstrates higher rates for this subpopulation across a range of settings. Disordered symptom cases are more prevalent in aged-care facilities than in community settings with mental disorders also higher for hospital-based studies compared to community settings. The high rates of reported prevalence among the elderly warrant the need to develop more effective public health and welfare approaches to prevent, treat and manage mental disorders among this vulnerable population.

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