

REVIEW**GENDER DISPARITY IN PREVALENCE OF DEPRESSION AMONG PATIENT POPULATION: A SYSTEMATIC REVIEW****Kalkidan Hassen Abate¹****ABSTRACT**

BACKGROUND: Many people are unable to withstand the set point for usual vicissitudes of life and are overwhelmed by depression, especially when there is a potential stressor like a disease. Gender is very important in defining susceptibility and exposure to a number of mental health risks. The objective of this review is to systematically identify, appraise and synthesize the best available evidence on gender disparity in prevalence of depression among patient populations.

METHODS: Observational analytical studies done on patients of 18 years old were included. The JBI-MASARI tool for extraction was used to pool quantitative data. Review Manager Software was used for meta-analysis and Odds ratios and their 95% confidence intervals were calculated.

RESULT: On Meta-analysis, a total of 19639 patients were involved, with male to female ratio of 1.14:1. The finding of the Meta analysis showed that male sex is 63% less likely to develop depression than female sex (Odds ratio=0.63, 95% Confidence Interval= 0.59, 0.68). The studies included were homogenous; Heterogeneity test: $\text{Chi}^2 = 309.23$, $df = 30$, ($P < 0.00001$).

CONCLUSION: Depression is more common among females than male patients.

KEYWORDS: Gender disparity, depression, systematic review

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INTRODUCTION

Data on the size of the global burden of mental disorders reveals depression as being a significant and growing public health problem associated with a heavy burden of morbidity and disability in both developed and developing nations (1). There are wide ranges of points of view and perspectives of human psychological construct: as normal facilitating, pathological debilitating, emotional state or reaction, disorder and syndrome (2). The capacity to tolerate a “normal expectable” level of stressor is a sign of optimum mental health (3). However, many people are unable to withstand the set point for usual vicissitudes of life and are overwhelmed by anxiety and depression; as a result, symptoms of depression and/or anxiety may develop. Among all psychiatric disorders, anxiety and depression are the most frequent (1).

Gender is one of the critical determinants of health which influences the power and control men and women have over the determinants of their health, including their socioeconomic position, roles, rank and social status, access to resources and treatment in a society (4). As such, gender is important in defining susceptibility and exposure to a number of mental health risks (1). It becomes impossible to examine the impact of gender on mental health without studying existing gender-based disparity in prevalence of depression as baseline data (3). Consequently, the conceptual framework for this review is developed to determine disparity if it exists so that the study can contribute to endeavors of redressing the determinants that lead to poor health.

Many of the negative experiences of and exposures to mental health risk factors that lead to and maintain the psychological disorders predominately involve gender-based socio-

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economic expectations (4). To reduce the contribution of gender in the rise of prevalence of depression among patient population, gender sensitive health care is essential and services must be tailored to meet the needs of each gender.

The literature consistently indicates that both diagnostic syndrome and clinical depression are more prevalent among boys than girls until adolescence, when rates for girls increase while rates for boys stabilize, until the 2:1 ratio is established (5). In adulthood, some review showed that women are approximately twice as likely as men are to experience depression. However, findings of disparity on patient population are inconsistent (Table 1)-some favoring the classical finding-more females depressed while others not (Table 1). Thus, this review is done and believed to be helpful to provide the best available evidence on disparity in gender specific prevalence of depression among patient populations.

METHODS

The objective of this review was to systematically identify, appraise and synthesize the best available evidence on gender disparity in prevalence of depression among patient population by limiting variations of the diagnostic criteria or instrument and enabling similar set of reference for the study population. Studies done on patients of 18 years old or older regardless of country of residence, ailment sustained or comorbid factors were included. Observational analytical studies (cohort studies, case-control studies and cross-sectional studies) only done by Beck depression scale (BDI), Zung Self-Rating Depression Scale (ZUNG SDS), Diagnostic and Statistical Manual of Mental illness (DSM IV), Hospital Anxiety and Depression Scale (HADS), Hamilton Depression Rating Scale (HDRS), The Mini-International Neuropsychiatric Interview (MINI), The Composite International Diagnostic Interview (CIDI), Epidemiological Studies-Depression scale (CES-D), six-item Self-report scale (K6) and

Patient Health Questionnaire 9 (PHQ-9) for depression were considered for inclusion. These scales have been used to assess anxiety more extensively worldwide than any other measures and selected for their validity and reliability on the study setting.

Three staged search strategy was used to identify all relevant published literature in English language from the millennium to 2012. Databases searched were PubMed, CINAHL, PopLine, LILACS, MedNar and Embase. All papers selected for inclusion in the review were subjected to a rigorous, independent appraisal by the investigator prior to inclusion in the review using standardized critical appraisal instruments from the Joanna Briggs Institute (6). Quantitative papers were pooled in statistical meta-analysis using the Review Manager Software (Rev Man 5). Odds ratios and their 95% confidence intervals were calculated for analysis.

The following search strategy was modified for the various databases and search engines with initial keywords/search terms: (“Depression” OR “Prevalence of depression” OR “Prevalence of anxiety and depression” OR “anxiety”, OR “depression) and (Gender difference OR “sex difference” OR “gender”OR “gender disparity”).

RESULTS

A total of 2450 relevant papers were identified in the literature search and 685 of them were retrieved for examination. Following review of titles and abstracts against the review objectives and inclusion criteria, 569 titles were excluded. The full texts of the remaining 116 studies were retrieved for detailed evaluation, after which, 55 of these were excluded. The remaining 61 studies were assessed for methodological quality using the JBI-MAStARI critical appraisal tool and, subsequently, 31 studies were included in the review for meta-analysis; the other thirty studies were deemed to be of insufficient methodological quality and were excluded from the review.

Table 1: Summary of main details of the included studies

Author	year	Sample size(N)	Tool	% Male depressed	Total N	% Female depressed	Total N
Reyes-Zúñiga <i>et al.</i> (7)	2012	382	HADS	73	236	75	146
Moussaset <i>al.</i> (8)	2008	132	BDI	34	78	30	54
Tselebiset <i>al.</i> (9)	2010	167	BDI	73	132	26	35
Li XJ <i>et al.</i> (10)	2012	1059	HADS	114	914	177	1081
Na Yong <i>et al.</i> (11)	2012	176	HADS	3	32	28	144
Golpouret <i>al.</i> (12)	2012	100	BDI	9	44	44	56
Tovilla <i>et al.</i> (13)	2012	702	HDRS	139	310	196	392
Sulehriet <i>al.</i> (14)	2010	60	BDI	31	36	17	24
Nidhinandana <i>et al.</i> (15)	2007	110	TGDS	15	38	9	22
Al Ansari <i>et al.</i> , (16)	2010	300	MINI	54	130	100	170
Eiman M., Manal S. (17)	2004	125	DSM-IV	10	45	63	80
Arrollet <i>al.</i> (18)	2009	7433	CIDI	370	4460	337	2973
Mhaidat <i>et al.</i> (19)	2009	280	HADS	29	146	43	134
Zafarullah K. (20)	2012	81	DSM-IV	23	49	8	32
Sherina <i>et al.</i> (21)	2002	188	DSM-IV	31	117	10	91
Liang <i>et al.</i> (22)	2012	1144	Zungscal	144	487	237	657
Silva <i>et al.</i> (23)	2011	288	HDRS	18	125	48	193
Gottlieb <i>et al.</i> (24)	2004	155	BDI	78	122	15	33
Darnal <i>et al.</i> (25)	2005	914	CES-D	156	552	106	361
Bokhari <i>et al.</i> (26)	2002	154	HADS	36	115	21	39
Maharajet <i>al.</i> (27)	2005	734	Zungscale	40	196	429	538
Afolabiet <i>al.</i> (28)	2008	250	ZDS	29	74	71	176
Onesirosan <i>et al.</i> (29)	2010	200	BDI	23	69	37	71
Nabil <i>et al.</i> (30)	2010	347	K6	17	120	32	227
Lesman-Leegteet <i>al.</i> (31)	2009	958	CES-D	217	603	170	355
Bhandarkaret <i>al.</i> (32)	2011	353	HADS	74	190	99	263
Dutta <i>et al.</i> (33)	2013	476	PHQ9	67	195	184	281
Monteiro and Aparecida. (34)	2010	114	HDRS	50	62	50	52
Agbiret <i>al.</i> (35)	2010	160	DSM-IV	10	94	21	66
Hakimshooshtaryet <i>al.</i> (36)	2007	509	DSM-IV	261	407	37	102
Freedlandet <i>al.</i> (37)	2003	313	DSM-IV	88	303	136	310

On Meta-analysis, a total of 19639 patients were involved, with male to female ratio of 1.14:1. Among male patients (10481), 2316 were found to have depression (22%). On the contrary, 2856 of the total female patients (9158) were found to have depression (31.2%). The finding of the Meta-analysis showed male sex is 63% less likely to develop depression than female sex (Odds

ratio=0.63, 95% Confidence Interval= 0.59, 0.68). The studies included were homogenous; heterogeneity test: $\text{Chi}^2 = 1.35$, $\text{df} = 2$, ($P = 0.51$). The test for overall effect also showed a high statistical significance at conventional levels ($P < 0.000001$). Thus females are more depressed than males among patient populations:

Table 2: Meta-analysis of included studies

Study or Subgroup	Experimental		Control		Weight	Odds Ratio		Odds Ratio M-H, Fixed, 95% CI
	Events	Total	Events	Total		M-H, Fixed, 95% CI	M-H, Fixed, 95% CI	
Zafarullah K.	23	49	8	32	0.3%	2.65	[1.00, 7.05]	
Tselebis et al.	73	132	26	35	1.0%	0.43	[0.19, 0.98]	
Tovilla et al.	139	310	196	392	5.1%	0.81	[0.60, 1.10]	
Silva et al.	18	125	48	193	1.7%	0.51	[0.28, 0.92]	
Sherina et al.	31	117	10	91	0.4%	2.92	[1.35, 6.34]	
Bokhari et al.	36	115	21	39	1.1%	0.39	[0.19, 0.82]	
Reyes-Zúñiga et al.	73	236	75	146	3.4%	0.42	[0.28, 0.65]	
Onesirosan et al.	23	69	37	71	1.3%	0.46	[0.23, 0.91]	
Nidhinandana et al.	15	38	9	22	0.4%	0.94	[0.32, 2.75]	
Nabil et al.	17	120	32	227	1.0%	1.01	[0.53, 1.90]	
Na Yong et al.	3	32	28	144	0.5%	0.43	[0.12, 1.51]	
Moussas et al.	34	78	30	54	1.1%	0.62	[0.31, 1.24]	
Monteiro and Aparecida.	50	62	50	52	0.6%	0.17	[0.04, 0.78]	
Mhaidat et al.	29	146	43	134	1.9%	0.52	[0.30, 0.90]	
Maharaj et al.	40	196	429	538	9.7%	0.07	[0.04, 0.10]	
Li XJ et al.	114	914	177	1081	7.6%	0.73	[0.56, 0.94]	
Lesman-Leege et al.	217	603	170	355	7.3%	0.61	[0.47, 0.80]	
Freedland et al.	88	303	136	310	5.1%	0.52	[0.37, 0.73]	
Liang et al.	144	487	237	657	7.6%	0.74	[0.58, 0.96]	
Hakimshoostary et al.	261	407	37	102	1.1%	3.14	[2.00, 4.93]	
Gottlieb et al.	78	122	15	33	0.5%	2.13	[0.98, 4.63]	
Golpour et al.	9	44	44	56	1.6%	0.07	[0.03, 0.19]	
Eiman M., Manal S.	10	45	63	80	1.9%	0.08	[0.03, 0.19]	
Dutta et al.	67	195	184	281	5.3%	0.28	[0.19, 0.41]	
Bhandarkar et al.	74	190	99	263	2.7%	1.06	[0.72, 1.55]	
Darmall et al.	156	552	106	361	4.9%	0.95	[0.71, 1.27]	
Arroll et al.	370	4460	337	2973	19.7%	0.71	[0.61, 0.83]	
Sulehri et al.	31	36	17	24	0.2%	2.55	[0.70, 9.28]	
Al Ansari et al.	54	130	100	170	2.7%	0.50	[0.31, 0.79]	
Agbir et al.	10	94	21	66	1.2%	0.26	[0.11, 0.59]	
Afolabi et al.	29	74	71	176	1.4%	0.95	[0.55, 1.66]	
Total (95% CI)		10481		9158	100.0%	0.63	[0.59, 0.68]	
Total events	2316		2856					
Heterogeneity: $\text{Chi}^2 = 309.32$, $\text{df} = 30$ ($P < 0.00001$); $I^2 = 90\%$								
Test for overall effect: $Z = 12.58$ ($P < 0.00001$)								

DISCUSSION

The finding of this review is consistent with results of studies conducted across many nations which showed that women are about twice as likely as men to develop depression (38-39). There was no difference identified in disparity in prevalence of depression among patient populations except mimicking the classical finding of general population which is higher prevalence of depression among females. Higher depression disorders among women in general population was noted in studies done by Kessler, McGonagle, Swartz, Blazer, & Nelson-lifetime prevalence of 21.3%, compared with 12.7% in men (38-40). The result of this study reflects similarity in men and

women's depressive response when both sexes are exposed to stressors.

Even when women and men are confronted with similar stressors, the former may be more vulnerable than the latter to develop depression and related anxiety disorders such as posttraumatic stress disorder (41). Women's greater reactivity compared with men's has been attributed to gender differences in biological responses, self-concepts, and coping styles. Understanding the gender difference in depression is important for at least two reasons. First, women's high rates of depression incur tremendous costs in quality of life and productivity, for women themselves and their families, so that health care system should give gender sensitive care directed to alleviate the problem. Second, understanding the gender

difference in depression will help us to understand the causes of depression in general. In this way, gender provides a valuable lens through which to examine basic human processes in psychopathology and psychotherapy.

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