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Depression literacy in women attending university hospital clinics in Riyadh Saudi Arabia

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Abstract

Background: Depression literacy in general population constitutes an ability to understand depression, with knowledge of disease, its risk factors and symptoms. High levels of depression literacy promote early intervention, potentially reducing related disability.

Aim: This study investigated the depression literacy in women visitors to clinics of a tertiary care hospital in Riyadh, Saudi Arabia.

Methods: Women of 18 and more years were surveyed during their visit to primary and other healthcare clinics of a public hospital in Riyadh. Knowledge on depression symptoms, causes and management approaches identified depression literate women scoring more than 30 points on a 42-item tool.

Results: Of the 409 participants, 65.5% were depression literate, 50% educated as college and above, 64.3% married, 50.7% housewives, 62.4% reported use of multiple information sources (range, 0–8) and had a mean age of 34.9 (standard deviation (*SD*), 12.4) years. In a logistic regression model, participants scoring less than 30 for depression literacy were significantly associated with women having less than college-level education, divorced marital status and use of decreasing number of learning resources.

Conclusion: Women with low education divorced; using fewer information sources need specific considerations by healthcare providers for assessment of depressive disorders in this setting.

Keywords

Depression, literacy, women, education, divorced

Introduction

Depression is one of the most common mental disorders, globally affecting 350 million people (Ferrari, Charlson, Norman, Patten, et al., 2013; World Health Organization [WHO], 2012). Over the period of 10 years (2000–2010), its burden changed from third leading cause to second leading cause of non-fatal global burden and diseases (Ferrari, Charlson, Norman, Flaxman, et al., 2013; Ustun, Ayuso-Mateos, Chatterji, Mathers, & Murray, 2000). Depressive disorders carry complex etiological factors with psychopathology involving genetics, neural circuits and behavioral phenotypes (Dunn et al., 2015). Compared to men, more women are affected by depression (5.5% vs 3.2%; Ferrari, Charlson, Norman, Flaxman, et al., 2013), encountering the economic impacts in terms of loss of productivity, increased disability claims and greater use of healthcare services (Murray & Lopez, 1996). Predominance in females is explained by hormonal changes, low social support and physical and sexual abuse (Piccinelli & Wilkinson, 2000).

Health-seeking behavior for depressive disorders varies in general; however, a recent study from Saudi Arabia

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conducted on visitors to gastroenterology clinics reported that females were 2.4 times more likely than males to have depression and females were more likely to subsequently seek help at private clinics (23% vs 14%), or with a Quran therapist (11% vs 5%; Alosaimi, Al-Sultan, Alghamdi, Almohaimeed, & Alqannas, 2014). Among visitors of faith healing setting in Saudi Arabia, depressive disorders were the most prevalent (34.9%; Alosaimi, Alshehri, Alfraih, et al., 2014). In the Middle East and North Africa region; the role of women in society is changing from the traditional home based to the modern role as more women are acquiring higher education and joining the workforce (Moghadam, 2003). The stress and struggle to fulfill both roles and societal pressure can increase and intensify episodes of depression and anxiety (Schwartz, 1991; Douki, Zineb, Nacef, & Halbreich, 2007). There is a lack of understanding about depression and help-seeking behavior of those affected, despite the fact that it is a highly prevalent mental disorder (Jorm, 2012).

Strengthening of basic health literacy has emerged as a multidimensional concept with evidence of influencing positive health outcomes at individual and community levels as described by World Health Regional Office for Europe [WHRO] (2013). Jorm (1997) defined mental health literacy as 'the ability to recognize specific disorders; knowing how to seek mental health information; knowledge of disease, and risk factors and causes, of self-treatments, and of professional help available; and attitudes that promote recognition and appropriate help seeking'.

The variation in mental health literacy exists, as in some parts of the world depression is an under recognized mental disorder. In Japan and Sweden, less than 50% of study population could correctly recognize depression when questioned with a vignette, while 75% of study populations identified depression in Canada and Australia (Dahlberg, Waern, & Runeson, 2008; Jorm et al., 2005; Wang et al., 2007). A study done in the United States showed that up to 80% of the population correctly recognized depression (Gabriel & Violato, 2010). Few studies have been done in the Middle East region on specific health-related literacy. A research done in Qatar compared the knowledge and attitude toward mental illness between Qatari and non-Qatari Arabs (Bener & Ghuloum, 2011a). Only 28% of non-Qatari Arabs managed to identify depression as opposed to 16.5% of Qataris (Bener & Ghuloum, 2011a). In Kuwait, 25.8% of those surveyed could correctly identify depression (Eid & Alzayed, 2005). To date, there are no studies reported from Saudi Arabia on the national-level prevalence of mental disorders, particularly depression. However, there is an ongoing initiative through the Saudi National Mental Health Survey (SNMHS) (2010) to determine the prevalence, risk factors, co-morbidities, treatment services and outcome of mental disorders in KSA. With regard to depression awareness, there is a lack of information on awareness about depression in Saudi women. The aim of this study is to measure the prevalence of depression literacy in women visiting outpatient clinics at a secondary care hospital in terms of awareness and understanding of the disease, its symptoms, causes, management modalities, attitudes and beliefs toward people suffering from depression.

Methodology

Study design

A cross-sectional survey performed in the months of February to March in 2012.

Setting and study participants

Women visiting the outpatient clinics during the five working days of the week at King Khalid University Hospital (KKUH) in Riyadh Saudi Arabia were invited to participate. KKUH is the one of the large tertiary care hospitals, with 800-bed capacity and 161 outpatient clinic rooms catering to patients from various regions from within and outside of Riyadh city.

Consenting women of 18 and more years were eligible to participate, excluding those who were unable to communicate in Arabic language. Eligible participants were approached individually in the waiting areas of primary health care (PHC), pediatrics, medicine, surgery, ophthalmology, ear–nose–throat, dermatology, obstetrics/gynecology, employee and staff outpatient clinics.

Sampling and sample size

Study participants were sampled from morning and afternoon clinics during the five working days of week, using a schedule to cover the major outpatient clinics of hospital. Consecutive participants in female waiting areas were approached inviting them to participate using a sampling of convenience.

Using an assumption that 50% of study population would be depression literate with a margin of error of 5%, and a 95% confidence level, a sample size of 374 (2004 by Raosoft, Inc.) women participants was calculated. To compensate for non-response and missing information, 20% was added, giving a total sample size of 459 women.

Data collection

The data collection tool was constructed using the reported literature on assessing depression knowledge, symptoms, causes and management approaches (Beck, Ward, Mendelson, Mock, & Erbaugh, 1961; Bener & Ghuloum, 2011b; Mansour, 2008; Wahlbeck & Mäkinen, 2008). We ensured the validity and reliability of depression literacy variables used in our assessment tool. One of the survey

instrument (Bener & Ghuloum, 2011a) reported high level of validity and repeatability (kappa = .85) of their instrument when tested on 100 randomly selected study participants visiting PHC centers. The questionnaire was reviewed prior to and after translation by a certified psychiatrist at KKUH, for all content including that obtained from Beck Depression Inventory (Beck et al., 1961). A pilot study using the Arabic questionnaire was conducted in 10 women attendees of PHC clinic waiting area over 2 days during morning and afternoon clinics. The Arabic version was face validated by experts in psychiatry and epidemiology. The scale was then pilot-tested before widespread distribution. The contents of the questionnaire were modified based on the feedback from the pilot sample.

The final questionnaire comprised the following sequence of sections: (1) socio-demographic characteristics including age, nationality, marital status, educational level and working status. (2) Opinions for depression: (a) knowledge had 6 items, (b) symptoms of depression had 13 items, (c) causes of depression had 6 items, methods and (d) choices for managing with depression had 10 items, (e) choice of expert for depression had 7 items, (f) sources of information used by participants were structured from none to 8 potential sources (Internet, television, newspapers/magazines, leaflets/posters, hospitals/clinics, pharmacist/chemist and relatives/friends/spouses) and (g) beliefs and attitudes of study participants' toward those suffering from depression. Response on depression literacy sections and variables (a–e and g) on knowledge, signs and symptoms, causes, treatment method choices, selection of expert and attitudes toward persons with depression comprised 'strongly agree', 'agree', 'disagree' and 'strongly disagree'. Response for information sources (section f) was obtained as 'yes' or 'no'. Items included in sections a–e constituted 42 items.

Data collectors were trained and supervised by authors to enhance standardization in data collection methods. Data were collected during the clinics working hours from 8 a.m. to 4 p.m. Data collection was done by trained medical student volunteers. A self-administered survey in Arabic language was done, while face-to-face interview was only done for participants who were not literate. Two representatives from the data collectors were assigned in each data collection clinic to facilitate communication with the research team.

Variables

Age was categorized into four groups of less than 25 years, 25–34 years, 35–44 years and equal to or more than 55 years. Marital (single, married, divorced, widowed) and working status (housewife, part-time job, full-time job, student) had four categories each. Education was ascertained in five groups per local schooling educational groups (illiterate, elementary, intermediate, high school, college and above). The overall depression literacy score was calculated from the sections (a–e) by merging strongly agree and agree as one category and disagree and strongly disagree as another category. A score of 1 was used for each of the correct response from a total of 42 items. In addition to these items on depression literacy, beliefs and attitude toward people suffering from depression were obtained on a scale from strongly agree, agree, disagree and strongly disagree.

Statistical analysis

Descriptive characteristics were calculated using percentages for categorical variables and summary statistics (mean, median, standard deviation (*SD*) and range) for continuous variables. We used central tendency of data to decide for the cutoff point for depression literacy scores. Therefore, the cutoff of scoring more than or equal to mean score of 30 points categorized study participants having greater level of depression literacy, whereas scoring less than 30 points on a 42-item scale was categorized having low levels of depression literacy. Depression literacy score had a normal distribution, and participants scoring more than or equal to the mean score of 30 points (~ >70%) were defined as depression literate.

Regarding use of sources of information, a range from zero to eight sources was asked, and each source was examined as separate as well as an overall number of information sources used per person. Socio-demographic characteristics were compared with the main outcome variable of depression literacy categorized with a score more than or equal to 30 as adequate and less than 30 score as inadequate. Odds ratios (OR) and 95% confidence intervals were calculated. Continuous variables' statistical significance was tested using Student's *t*-test. Categorical variables were compared with outcome using chi-square as test of significance. A *p*-value of less than .05 was considered as a significant difference. Logistic regression modeling was performed to examine the factors associated with low levels of depression literacy.

Ethical considerations

Institutional Review Board at College of Medicine, KKUH at King Saud University, approved the study protocol. Relevant approvals were obtained from the KKUH hospital administration for data collection from the outpatient clinics of the hospital. A signed informed consent was obtained from all participants. Participant's anonymity was ensured, by assigning each participant with an identification code number for the purpose of analysis. No incentives or rewards were given to the participants.

Results

A total of 459 eligible participants were approached, 422 consented to participate and complete data for depression literacy were available for 409 participants. The mean age

Table 1. Socio-demographic characteristics by age groups of women attending clinics.

#	Socio-demographic characteristics	$N = 409$, n (%)	% In each age group (years)				p-value
			<25 ($n = 97$), %	25–34 ($n = 101$), %	35–44 ($n = 127$), %	⩾45 ($n = 84$), %	
1	Education						<.001
	Illiterate	24 (5.9)	0.0	0.0	8.6	16.0	
	Elementary	27 (6.7)	2.1	1.7	6.5	17.0	
	Intermediate	40 (9.9)	7.2	1.7	14.0	18.0	
	High school	111 (27.3)	39.2	23.3	25.8	22.0	
	College and above	204 (50.2)	51.5	73.3	45.2	27.0	
2	Marital status						<.001
	Single	107 (26.2)	66.0	32.8	2.2	2.9	
	Married	263 (64.3)	32.0	62.9	88.2	74.8	
	Divorced	20 (4.9)	2.1	3.4	7.5	6.8	
	Widowed	19 (4.6)	0.0	0.9	2.2	15.5	
3	Nationality						<.197
	Saudi	387 (94.6)	97.9	92.2	92.5	96.1	
	Non-Saudi	22 (5.4)	2.1	7.8	7.5	3.9	
4	Working status						<.001
	Housewife	205 (50.7)	22.9	45.6	58.1	76.2	
	Part-time employed	19 (4.7)	2.1	7.0	5.4	4.0	
	Full-time employed	96 (23.8)	7.3	32.5	34.4	19.8	
	Student	84 (20.8)	67.7	14.9	2.2	0.0	
5	Overall score <30	141 (34.5)	28.9	33.6	33.3	41.7	<.278
	Overall score ⩾30	268 (65.5)	71.1	66.4	66.7	58.3	
6	How did you obtain the information you have about depression? (multiple)						
	Internet	367 (67.0)	79.1	81.5	61.0	42.9	<.001
	Television	369 (73.2)	71.4	78.7	78.5	63.7	<.048
	Newspaper/magazine	369 (43.4)	37.4	46.3	43.0	46.2	<.516
	Books	368 (60.3)	64.4	63.0	62.0	51.6	<.002
	Leaflets/posters	369 (43.4)	50.5	50.0	40.5	36.3	<.128
	Hospitals/clinics	369 (41.5)	50.5	37.0	40.5	38.5	<.241
	Pharmacist/chemist	369 (11.4)	11.0	13.0	12.7	8.8	<.865
	Relatives/friends/spouses	367 (51.5)	64.4	41.1	53.2	49.5	<.021

of the participants was 34.95 (*SD*, 12.36) years, with majority of women in the age group of 35–44 years (Table 1). The greater part of respondents was of Saudi nationality (94.6%), married (64.3%), housewives (50.7%) and were educated as college and above (50.2%; Table 1). Of the 409 participants, the mean depression literacy score was 29.9 (*SD*, 7.5) and 65.5% were depression literate (score ⩾30; Table 1). The mean number of information sources used by participants was 3.8 (*SD*, 1.82) with a median of four sources (range, 0–8) for obtaining information about depression.

Socio-demographic characteristics varied significantly by age groups of study participants: younger women (age <35 years) tended to be more educated compared to women more than 35 years of age, younger women were mostly single, whereas divorced and widowed were in older age group, women between the age groups of 24–44 years were employed full-time and majority of younger women (<25 years) were students (Table 1). Main information sources used by the majority of study participants were Internet, television and relatives (including friends and spouses) and these differed significantly by age, being used in increasing number by younger women compared to older women (Table 1).

Table 2 displays the correct responses provided by the participants on depression literacy tool of 42 items. Of the 42 items, only 5 items differed by the four age groups: two from knowledge, one from symptoms and two from ways to treat depression (Table 2). The knowledge items did not differ by age groups except for two items: 'causes of depression are unknown' and 'depression affects both males and females' as fewer older women gave correct responses compared to younger women (Table 2). Women >45 years of age group did not think that healthy activities like sports can help improve depression symptoms ($p < .001$), and on the contrary elder women compared to younger women were of the opinion that medication will have to be taken for depression symptoms (Table 2). Regarding choice of treatment expert, few participants opined for family/general physician (40.2% overall), but

Table 2. Depression literacy based on knowledge, symptoms, causes and management of depression by study participants.

#	Correct responses as %	N = 409 %
I	*Knowledge about depression*	
1	Depression is a true clinical disorder	65.5
2	Depression is a common disorder	83.0
3	The causes of depression are unknown[a]	55.5
4	Depression is treatable	97.3
5	Depression affects both males and females[a]	94.5
6	Depression affects females more than males	72.9
II	*Typical symptoms of depression*	
7	Sadness	93.4
8	Pessimism	82.1
9	Past failure	85.2
10	Loss of pleasure in what used to be pleasurable	80.8
11	Guilty feelings	78.2
12	Self-dislike	77.1
13	Self-criticalness	69.8
14	Worthlessness	66.0
15	Crying	82.8
16	Physical complaints (agitation, irritability, sleep and appetite)	88.0
17	Loss of energy, tiredness and fatigue	83.0
18	Loss of interest in sexual activity[a]	62.7
19	Suicidal thoughts/desire to commit suicide	62.8
III	*Causes of depression*	
20	Heredity	37.3
21	Unhealthy lifestyle	77.6
22	Problems with other individuals in family or workplace	88.4
23	Weakness of character, for example, weak personality	76.0
24	Certain medical conditions, for example, cancer, diabetes, heart diseases	77.3
25	Traumatic event (death of closed one, injury/theft/disaster)	86.6
IV	*Which of the following are some of the ways to treat depression?*	
26	Healthy activities (e.g. sports)[a]	91.6
27	Eat chocolate or sweet things	43.5
28	Talk to family or friends	93.4
29	Go on holiday	94.2
30	Take sedative pills	48.5
31	Take antidepressants medicine[a]	66.8
32	Consult a doctor or psychiatrist	93.6
33	Contact a non-medical/alternative medical practitioner	46.3
34	Praying	98.7
35	Involve in recreational activities	93.6
V	*In your opinion how successfully can depression be treated by a*:	
36	Family/general physician	40.2
37	Psychiatrist	93.3
38	Psychotherapist	86.3
39	Religious person	82.2
40	Traditional healers, for example, herbalists	82.4
41	Family and friends	65.1
42	Not seeking help from anyone	84.4

[a]Responses differed significantly by age groups; greater correct responses by younger women than older women except for items #18 and #31.

majority had the opinion that psychiatrists, psychotherapists and other supporters are the possible choices. Majority of participants also opined that not seeking help from anyone can also treat depression symptoms (Table 2).

For approach to persons suffering from depression, a substantial number (50%) believed that a depressed person can work effectively, 27.3% considered it a shame to mention that there is someone in family suffering from depression and 23.6% were not willing to maintain friendship with someone suffering from depression (Table 3). Most of the unfortunate beliefs and attitudes were significantly more in older women than in younger women (Table 3).

When low score (<30) for depression literacy was used as an outcome, depression literacy did not differ significantly by age groups, nationality and working status but by education, marital status and use of increasing number of information sources (Table 4). Increasing number of use of information sources was associated with having a high score on depression literacy (mean of 3.3 sources in <30 score vs mean of 4.3 number of source use in those with ⩾30 score on depression literacy; $p < .001$; Table 4). Adjusted estimates showed that education less than college, divorced marital status and using smaller number of information sources were significantly associated with low levels of depression literacy (Table 4).

Discussion

Less than college education was one of the major factors contributing to low depression literacy in study participants. A moderate number of women (65.5%) had adequate depression literacy consistent with studies that invariably examined mental health or depression literacy from the United States, Australia, Canada, Sri Lanka and Malaysia (68%–76.9%; Amarasuriya, Jorm, & Reavley, 2015; Deen & Bridges, 2011; Jorm, 1997, 2012; Khan et al., 2010; Schwartz, 1991; WHRO, 2013). Several studies report low levels of depression literacy in a western setting; only one-third of the study population (adults 20–64 years, $n = 3538$) could recognize depression vignette (Dahlberg et al., 2008), 42.5% of adolescents could identify depression (Melas, Tartani, Forsner, Edhborg, & Forsell, 2013) and 50% of study population (staff members of public services, $n = 1027$; Svensson & Hansson, 2015) could not recognize depression.

Our study showed that majority of women (50%) had a high educational status (college and above) and obtained high scores for depression related literacy questions. Many studies reported higher level of mental literacy in women than men (Amarasuriya et al., 2015; Deen & Bridges, 2011; Jorm, 1997) and among educated populations (Amarasuriya et al., 2015; Kamimura, Christensen, Tabler, Ashby, & Olson, 2013; Khan et al., 2010; Lorant et al., 2003). Reports from the year 2012 show that more than 95% of females enroll in primary education in Saudi Arabia (United Nations

Table 3. Study participants' approach toward persons suffering from depression.

Attitudes and beliefs		*N* = 409
In your opinion:		%
1	Those suffering from depression need to pull themselves together for getting over it[a] (% agreed)	91.5
2	A depressed person can work effectively (% agreed)	50.4
3	It is a shame to mention that someone in a family has depression[a] (% agreed)	27.3
4	You would not be willing to maintain a friendship with someone who has depression (% agreed)	23.6
5	You would not be willing to marry a person who was previously diagnosed with depression[a] (% agreed)	36.2
6	You would not be willing to marry a person who has family members diagnosed with depression[a] (% agreed)	22.8
7	You would not tell your future husband if you were diagnosed with depression (% agreed)	40.4

[a]Differed by age groups; younger women agreed more than older women for items #3, 5 and 6. In item #1, older women agreed more than younger women.

Table 4. Unadjusted and adjusted ORs showing relationship between participant's characteristics and depression literacy scores.

Variables	Score <30 141 (%)	Score ⩾30 268 (%)	Unadjusted OR (95% CI)	Multiple logistic regression model AOR (95% CI)
Age groups (years)				
<25	28 (19.9)	69 (25.7)	1	
25–34	32 (22.7)	69 (25.7)	1.14 (0.62–2.09)	
35–44	47 (33.3)	80 (29.9)	1.44 (0.82–2.49)	
⩾45	34 (24.1)	50 (18.7)	1.67 (0.90–3.11)	
Nationality				
Saudi	128 (92.1)	257 (95.9)	2.1 (0.85–4.8)	
Non-Saudi	11 (07.9)	11 (04.1)	1	
Working status				
Housewife	78 (56.9)	126 (47.4)	1.46 (0.85–2.52)	
Part-time	06 (04.4)	13 (04.9)	1.10 (0.37–3.19)	
Full-time	28 (20.4)	68 (25.6)	0.97 (0.51–1.85)	
Student	25 (18.2)	59 (22.2)	1	
Educational level				
Illiterate	07 (05.0)	17 (06.4)	1.11 (0.44–2.8)	0.33 (0.08–1.35)
Elementary	13 (09.4)	14 (05.3)	2.50 (1.10–5.6)	1.10 (0.34–3.01)
Intermediate	15 (10.8)	25 (09.4)	1.60 (0.79–3.38)	1.10 (0.45–2.50)
High school	49 (35.3)	62 (23.3)	2.13 (1.30–3.5)	2.13 (1.24–3.64)
College and above	55 (39.6)	148 (55.6)	1	1
Marital status				
Married	91 (65.5)	170 (63.4)	1	1
Single	28 (20.1)	79 (29.5)	0.66 (0.40–1.10)	0.67 (0.38–1.35)
Divorced	13 (09.4)	07 (02.6)	3.55 (1.33–9.00)	3.42 (1.14–10.28)
Widow	07 (05.0)	12 (04.5)	1.17 (0.42–2.86)	1.27 (0.35–4.62)
Increasing number of information sources used (mean (*SD*))	3.31 (1.7)	4.23 (1.8)	0.75 (0.66–0.85)	0.74 (0.66–0.85)

OR: odds ratio; CI: confidence interval; AOR: adjusted odds ratio; SD: standard deviation.

International Children's Emergency Fund [UNICEF], 2012–13). Consistently, there have been concerted efforts for education in women, and 58.5% of women in Saudi Arabia were enrolled in higher education in 2004 (Educational System in Saudi Arabia, 2006). Distribution for age and marital status variables from our study sample were comparable to data for women living in Riyadh (http://www.cdsi.gov.sa). For educational, status country-level data for education level of college and above for females by age groups (http://www.cdsi.gov.sa/ar/1790) were less comparable to our study sample, as we had more educated women than those at a country level by age groups. Regarding occupational status, our data showed that 23.8% were full-time and 4.7% were part-time employed. One study reported that 16% of females contributed to workforce in 2013 (RajKhan, 2013). Hence, it is also possible that we had a greater proportion of working women in our sample than in general population. Nevertheless, there is an increasing trend in

women to join any workforce. Our model adjusted for the differences seen by age, marital status and educational status, and hence we feel our results do have internal validity, but results need to be considered in for the sample being drawn from hospital visitors that comprised more working and educated women. Therefore, it is also likely that general population may possess lower depression literacy than that seen in our study.

One of the studies from the United States reported very high mental health literacy (80%) but was done among students enrolled in psychology courses (Coles & Coleman, 2010). In spite of the fact that other studies also showed that increased levels of education were related to health literacy, the cultural and personal beliefs may still be different to relate depressive disorders with some altered hypotheses (e.g. evil and unknown forces; Jorm et al., 2005; Khan et al., 2010).

We found significantly low scores for depression literacy in divorced women compared to married women. High rates of depression have been reported in such sub-groups including divorced women, widowed women and unemployed (Sharifi et al., 2015); therefore, these are vulnerable groups to experience psychological distress. It is necessary to promote depression literacy in such vulnerable sub-groups of women. Another study performed during an economic crisis in Romania reported high levels of depression in the divorced population but did not find any difference among employed or unemployed (Mihai, Ricean, & Voidazan, 2014). Our study comprised women population in Riyadh city, where women employment is currently being highly encouraged. However, our study did not address the challenges of low socioeconomic status in study participants. Low socioeconomic status has been reported as a high risk factor for depression (Lorant et al., 2003; Mihai et al., 2014; Sharifi et al., 2015), as opposed to high income and education that are reported to have protective effects (Lorant et al., 2003; Sharifi et al., 2015).

Along with high level of education, the use of multiple information sources in our study was significantly associated with increased scores for depression literacy. Use of multiple sources of information was greater in younger than older women in our study and this could also be due to the effect of younger and educated women who possessed specific learning style of using several resources. Regarding type of information sources used by women, a study from the United States reported that in general women used specifically more anonymous sources (e.g. Internet) versus interpersonal sources of information, and public stigma was the reason to use anonymous sources as well as not to seek any information (Simmons, Wu, Yang, Bush, & Crofford, 2014). Anonymous sources in the study from United States were defined (Internet, television, newspapers, magazines) where the participants' anonymity was maintained whereas interpersonal sources (physicians, consults, family members, friends, etc.) were where the participants' anonymity was not guaranteed (Simmons et al., 2014). Use of television, Internet, newspapers and magazines was relatively greater in older women in our study compared to interpersonal sources. Similar tendencies are also reported from Sweden and Australia (Farrer, Leach, Griffiths, Christensen, & Jorm, 2008; Svensson & Hansson, 2015).

Compared to other treatment experts, only 40.2% of our study participants opted for general practitioner or family physician(when responding to the choice of treatment expert). Such a finding for giving a lower selection for primary care practitioner is incompatible with a Canadian study where study participants identified the general family practitioner as their best option for treatment of depressive symptoms (Jorm, 1997). In reference to the utilization of a health specialist or service, a study from the United States reported that depression literacy predicted utilization of a religious leader for depression treatment (Deen & Bridges, 2011), which is also evident in our study.

Our study observed differences in socio-demographic characteristics by the four age groups and demonstrated relatively higher literacy in younger women than older women. This is also explained by the difference in education level between the age groups. A study done on a national sample of adults more than 18 years old from Australia showed heterogeneity in age groups and implied a need to analyze data based on age groups (Farrer et al., 2008). The same study from Australia observed the differences in young and old age groups in terms of beliefs, mental health literacy and choice of treating professional, concluding that mental health literacy differs across life span (Farrer et al., 2008).

Our study had a unique strength in designing a 42-item instrument to capture a wide scope of variables relevant to depression literacy (Beck et al., 1961; Bener & Ghuloum, 2011b; Mansour, 2008; Wahlbeck & Mäkinen, 2008). Furthermore, for each set of variables, our results appear to be consistent with international-level data along with the variation seen by age groups (Jorm, 1997). It has been argued that there is no single scale to measure depression literacy; some studies report use of case vignettes, others ascertain knowledge, beliefs and practices; and none of the methods are standardized (Furnham & Hamid, 2014). Such a criticism is to some extent valid; however, depression symptoms are known to be influenced by sociocultural experiences, stigmatizing attitudes and keeping a distance with persons with mental disorder; therefore, we feel that use of setting-related questionnaires for depression literacy does provide the population perspective.

We feel that the effect of increasing age on depression literacy in our study could, in part, be reflective of educational status. Women in Saudi Arabia are now acquiring higher education, becoming health literate and being more aware of helping persons with depression. Given the cross-sectional nature of our study design, such a composition of age and education associated with depression literacy cannot be generalized. Because of the use of convenience sampling among only women attending an academic tertiary

care medical service, our results should be cautiously generalized and not be considered as representative to all people living in Saudi Arabia.

Another limitation is self-reported data. Moreover, we did not inquire in our survey whether a family member or acquaintance of the participant suffered from depression as it may have affected their knowledge for depression. It is also possible that having any family member with depression may not be associated with an increase in depression literacy; as one study reported that those with history of depression in family and friends had lower scores on depression literacy (Amarasuriya et al., 2015).

In our study, young and educated were depression literate and possessed better attitudes toward persons with depression compared to older and less educated participants. Perhaps this could be perceived as changing attitudes over time with the changes in education levels and reduction in stigmatizing attitude and keeping a distance from those vulnerable to and suffering from mental illness or depression.

In terms of generalizability, there is a critique toward publication bias and availability of articles based on assessment of depression and its literacy that could translate to limited generalizability of findings (Lorant et al., 2003). It is a fact that the focus of the articles in the available literature has been on population literacy associated with depressive disorders, mental health and other specific psychiatric disorders. Nevertheless, importance of measuring health-based literacy is necessary as poor physical health is known to be associated with poor health literacy (Kamimura et al., 2013), long-standing beliefs (Jorm et al., 2005; Khan et al., 2010) and above all stress and disease (Kaplan, Madden, Mijanovich, & Purcaro, 2013).

Women are known to suffer more from all types of psychological distress symptoms and there is an impending threat of rising rates of depression in females in eastern Mediterranean and North African countries (Eloul, Ambusaidi, & Al-Adawi, 2009). A recent study done in PHC center visitor reports that overall 19% of men and women were found to have symptoms of depression in the past 2 weeks (Al-Qadhi, Rahman, Ferwana, & Abdulmajeed, 2014). Furthermore, a national-level study from Australia reports that those suffered from depression 54.7% received information (in descending order) from pamphlets, Internet, television, magazines, newspaper, radio and books; it further showed that those with low levels of education did not receive any information (Graham, Hasking, Clarke, & Meadows, 2015).

In our study setting, socially vulnerable groups of less educated and divorced female populations would need specific attention by PHC providers especially when they report with symptoms of psychological distress.

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