Research article

Psychometric properties of two Arabic Suicide Scales: stigma and literacy

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ABSTRACT

Suicide is one of the leading causes of death. Suicide stigma and literacy may affect the rate of suicide and help-seeking behaviors. This study examined the psychometric properties of the Arabic version of the Stigma of Suicide Scale-short form (SOSS-SF) and Literacy of Suicide Scale (LOSS). The sample included 160 Jordanian university students. Reliability analysis showed acceptable Cronbach's alpha levels of the three SOSS-SF subscales (stigmatization, isolation, and glorification subscales). Factor analysis supported the construct validity of the SOSS-SF by showing three factor structure similar to the three original subscales. LOSS scores showed low literacy level about suicide with a passing rate of 55% and a mean score of 5.63 out 12. Students had more difficulty in answering questions related to signs/symptoms and risk factors of suicide. This study will enable Arabic clinicians to use these tools which assess important aspects about suicide.

1. Psychometric properties of two Arabic Suicide Scales: stigma and literacy

Suicide is one of the leading causes of death. It is estimated that 800,000 people die every year by suicide (World Health Organization, 2018). The number of people who attempted suicide is significantly higher than this number (Substance Abuse and Mental Health Services Administration, 2017). The global average suicide mortality rate is 10.6 per 100,000 (World Health Organization, 2018). The highest rate is in Europe (15.4 per 100,000), while the lowest rate is in the eastern Mediterranean region (3.9 per 100,000), which includes most of the Arab countries (World Health Organization, 2018).

The majority (90%) of suicides had a history of mental illness, mainly depression (National Alliance on Mental Illness, 2013; Townsend, 2014; World Health Organization, 2018). Many suicidal people do not seek help because of the stigma related to suicide or mental illness (Al Ali et al., 2017; Rayan and Jaradat, 2016, World Health Organization, 2018). Consequently, people with higher levels of stigma toward mental illness or suicide may be at higher risk to relapse or to have another suicidal attempt. So, it is important to assess level of stigma toward suicide within communities and find solutions to decrease the rate of stigma.

Another significant factor that affect help-seeking behavior and level of stigma is literacy level about mental illness and suicide specifically. Several researchers found that higher literacy levels about mental illness and suicide may decrease stigma levels and improve help-seeking

behaviors to mental health services and thus reducing the number of suicidal acts (Barney et al., 2006; Batterham et al., 2013b; Corrigan, 2004; Corrigan et al., 2000; Jorm, 2000; Jorm et al., 2003; Link and Phelan, 2006). So, it is important to assess suicide literacy level within communities and conduct public campaigns, focusing on deficits found during assessment, to improve literacy levels and awareness about suicide.

There is scarcity in the literature regarding suicide in Arab countries. To the best of our knowledge, there is no Arabic version of instruments that measure attitudes toward suicide. There are several instruments and scales that were developed to measure people's attitude toward suicide, but they included a wide variety of attitudes, and they were tailored to a specific population (Batterham et al., 2013a,b). Also, none of them was dedicated to measure stigmatizing attitudes toward suicide (Batterham et al., 2013a,b). The Stigma of Suicide Scale-short form (SOSS-SF; Batterham et al., 2013a,b) is a simple and easily understood scale that was developed to be used in the public community. Advantages of SOSS-SF include avoiding topics that may confuse or distract the responder such as factual knowledge, religious beliefs, euthanasia, and ritual suicide (Batterham et al., 2013a,b). Another advantage is the short amount of time required to complete SOSS-SF. Previous studies that investigated the psychometric properties of the English, Turkish, and Chinese versions of the SOSS showed high reliability and validity scores (Batterham et al., 2013a,b; Chan et al., 2014; Han et al., 2017; Öztürk et al., 2017; Williams et al., 2018).

In order to assess stigma of suicide, it is recommended to study the literacy of suicide concurrently. One of the commonly used measures to assess literacy of suicide is the Literacy of Suicide Scale (LOSS; Calear et al., 2012), which is used to measure literacy level about suicide in several domains such as causes, risk factors, signs/symptoms, and treatment. LOSS was translated into several languages, and it was used in several populations and countries (Batterham et al., 2013a,b; Han et al., 2017; Öztürk and Akin, 2018), but it has never been translated into Arabic.

According to World Health Organization (2019), suicide is considered the third leading cause of death among adolescents. It is estimated that 131,000 suicides yearly occur among adolescents and early adulthood people (i.e. 15-24 years old) (World Health Organization, 2019), and a significant number of people in this age are university students. Previous studies found that Jordanian university students have higher prevalence of mental disorders than other populations, which may increase the risk of suicidal ideation and suicidal attempts among university students (Al Matarneh and Altrawneh, 2014; Ismayilova et al., 2013; Rayan and Jaradat, 2016; Zawawi and Hamaideh, 2009). Aldalaykeh et al. (2019) reported that approximately 57% of Jordanian university students had a mild to moderate level of depression. So, it is important to examine the psychometric properties among university students because they represent a vulnerable group with a high risk for suicide. Consequently, these tools may help us to develop preventive measures for suicide especially for adolescents and university students. The aims of this study are to evaluate the psychometric properties of the Arabic version of the SOSS-SF and LOSS, and to estimate levels of stigma and literacy about suicide among university students.

2. Materials and methods

2.1. Participants

This methodological study was conducted using a cross-sectional correlational design. The sample was recruited from a public university in Irbid, Jordan. This university has an enrollment of more than 20,000 students and offers undergraduate and graduate degrees in wide variety of specialties such as health, engineering, and science and arts. Students were recruited using convenience sampling method, and to decrease selection bias, they were recruited consecutively if they met inclusion criteria. Students were included in the study if they were native Arabic speakers.

The sample consisted of 160 university students with an average age of 19.76 ± 1.48. Most students were women (60%, $n = 96$), single (97.5%, $n = 156$) and not working (96.3%, $n = 154$). Eighteen (11.3%) students attempted suicide, while the majority (95%, $n = 152$) have never visited a psychiatrist. Only 18 (11.3%) students reported having a family member with a history of suicidal attempt. See Table 1.

2.2. Procedure

Institutional review board (IRB) approval was obtained from Jordan University of Science and Technology. The recruitment process, which took place at the library lobby, was guided by a trained research assistant who explained to potential participants the purpose of the study, inclusion/exclusion criteria, benefits of the study, and the principal investigator (PI) contact information. Participants have given consent for their data to be used in the research. Data were collected physically using a printed questionnaire, and the research assistant was available to answer questions and collect completed questionnaires.

2.3. Measures

2.3.1. The Stigma of Suicide Scale-short form (SOSS-SF)

this scale, developed by Batterham et al. (2013a,b), is composed of 16 items, each one contains a descriptor of people who end their life by

Table 1. Demographic and clinical characteristics (N = 160).

Variable	Category	Frequency (%)
Gender	Female	96 (60.0)
	Male	64 (40.0)
Educational level	1st year	42 (26.3)
	2nd year	57 (35.6)
	3rd year	40 (25.0)
	4th year	16 (10.0)
	5th year	3 (1.9)
	6th year	2 (1.3)
Major of study	Engineering	37 (23.1)
	General sciences	27 (16.9)
	Computer Science	19 (11.9)
	Pharmacy	16 (10.0)
	English	13 (8.1)
	Agriculture	11 (6.9)
	Medicine	9 (5.6)
	Nursing	8 (5.0)
	Other	20 (12.5)
Family history of suicide attempt	Yes	18 (11.3)
	No	142 (88.8)
Student history of suicide attempt	Yes	18 (11.3)
	No	138 (86.3)
	Missing	4 (2.5)
Have you ever visited a psychiatrist?	Yes	8 (5.0)
	No	152 (95.0)
Having a chronic illness	Yes	8 (5.0)
	No	152 (95.0)

suicide. Participants filling out this scale should determine their amount of agreement with each descriptor by choosing from five options ranging from strongly disagree (1) to strongly agree (5). SOSS-SF includes three subscales: stigmatizing attitude toward suicide (8 items), attribution of isolation or depression on suicide (4 items), and normalizing or glorification of suicide (4 items). Each subscale score is calculated by obtaining the mean of responses to the items representing that subscale, yielding scores in the range between one and five, with a mean score higher than three indicates agreement with the targeted concept. For example, higher scores of the isolation subscale means higher agreement that the suicidal attempt is caused by social isolation or depression of the suicidal person. These subscales showed good internal consistency in previous studies. For example, in a study of Chinese university students, results showed that Cronbach's alpha for Glorification, Isolation, and Stigma subscales were 0.77, 0.85, and 0.72 respectively (Han et al., 2017). In another study, the three subscales had a Cronbach's alpha greater than 0.78 (Batterham et al., 2013a,b).

2.3.2. The literacy of Suicide Scale (LOSS)

this scale is composed of 12 true/false items that measure knowledge about suicide in four dimensions: signs and symptoms (three items), causes/nature of suicide (four items), risk factors (two items), and treatment and prevention (two items) (Calear et al., 2012). Total score is obtained by summing the true responses and converting it to a percentage, yielding a range of scores between 0% to 100%. It is also possible to calculate the score of each of the four dimensions. Since each item has only two responses, item response theory was used instead of classical testing theory to assess the psychometrics of this scale (Calear et al., 2012). Consequently, neither internal consistency nor factor analysis is done to this scale. Rather, items are interpreted mainly according to the difficulty found by responders which is reflected by the mean score of each item.

Demographic and clinical characteristics such as age, gender, educational level, major of study personal or family history of suicidal attempt, history of mental illness were also collected.

2.4. Arabic translation

Permission was granted from original authors to use and translate the SOSS-SF and LOSS into Arabic (Batterham et al., 2013a,b). Translation into standard Arabic was done by two bilingual nursing professors who are fluent in Arabic and English, and specialized in psychiatric mental health. Backward translation into English was done by a translation professor specialized in English language. No major differences were found between the two English versions. In cases of inconsistency in translation, the professors discussed their point of views and reached to an agreement about the best statement or terminology that should be used.

2.5. Data management and analysis

Statistical Package for the Social Sciences Software (SPSS, 23.0) and AMOS were used to run the analysis. Descriptive statistics were used to identify demographic characteristics of the sample, and to calculate the scores and ranges of the instruments used in this study. Internal consistency of the SOSS-SF and the three subscales were assessed using Cronbach's alpha scores. Kaiser-Meyer-Olkin coefficient (KMO) and Bartlett's sphericity test were used to assess the factorability of items. Exploratory factor analysis (principal component analysis and orthogonal rotation) was used to assess the number of factors and similarity between the new factor structure and existing structure which includes three factors (Costello and Osborne, 2005). Also, assessment was done to determine whether the items that should represent a certain factor grouped together or not. Using AMOS software, Confirmatory Factor analysis (CFA) was performed to examine the model fit and construct validity of SOSS-SF. Convergent validity was estimated by measuring the amount of correlation between SOSS-SF and LOSS by using the Pearson correlation coefficient.

3. Results

Responses to SOSS-SF are shown in Table 2. Few endorsed the items in glorification subscale, except for the item that measured dedication (22.1%). Three items in the isolation subscale (lost, Isolated, and Lonely) were endorsed by more than 65% of the sample. Even the fourth item in this subscale (disconnection) was highly endorsed by the sample (49.1%). Among the stigmatizing items, "Coward" and "Irresponsible"

Table 3. Confirmatory Factor Analysis for SOSS: Fit indices (N = 160).

Measure	Value	Threshold
Chi-square/degrees of freedom (CMIN/df)	2.18	<3.00
CMIN p-value	0.00	>0.05
Goodness of fit index (GFI)	0.87	>0.90
Adjusted GFI (AGFI)	0.81	>0.80
Comparative fit index (CFI)	0.82	>0.80
Root mean square error of approximation (RMSEA)	0.80	<0.10

were endorsed by more than half of the sample. The remaining six items of stigmatizing subscale showed an endorsement rate ranging between 23.4% to 46.9%. Students agreed that suicide is attributed to isolation (Isolation subscale mean score = 3.65 ± 0.77). On other hand, students did not agree that suicide should be glorified, nor it should be considered normal (Glorification subscale mean score = 2.24 ± 0.73). Finally, students somewhat agreed that a suicidal person is considered stigmatizing (stigmatizing subscales mean score = 3.12 ± 0.77).

Exploratory factor analysis was performed to assess the construct validity of SOSS-SF. The KMO score was 0.77 and the Bartlett's test of sphericity was significant (x^2 = 660.10, p < 0.001), indicating the adequacy and suitability of data for factor analysis. The extraction method showed that there are three factor structure with an accumulative percentage of variance reaching 50% (Costello and Osborne, 2005). Stigmatizing, glorification, and isolation subscales accounted for 21.69%, 14.35%, and 13.96% of variance respectively. All three factors had eigenvalues higher than one (Costello and Osborne, 2005). Table 2 shows the factor loadings of all items, and it shows that the items that originally represented a certain subscale grouped together, which supports the construct validity of the SOSS-SF. For example, the first eight items that originally represented stigmatizing attitudes have grouped together under one factor with loadings ranging between 0.409 to 0.767. Also, the four items (Lonely, Isolated, Disconnected, and Lost) that originally represented isolation subscale have grouped together with loadings ranging between 0.510 to 0.830. Finally, the four items (Nobel, Strong, Dedicated, and Brave) that originally represented glorification subscale have grouped together with loadings ranging between 0.563 to 0.745. None, of the items had a loading of 0.300 or above on a different subscale which also supports the construct validity of SOSS-SF.

Table 2. Item responses and factor loadings for SOSS-SF (N = 160).

Item	Agree/Strongly agree %	Mean (SD)	Factor loadings		
			Stigma	Isolation	Glorification
Immoral	23.4	2.68 (1.15)	**0.767**	-0.015	0.065
Irresponsible	54.1	3.42 (1.20)	**0.676**	0.192	-.0228
Pathetic	46.9	3.21 (1.24)	**0.646**	-0.021	-0.062
Stupid	39.0	3.12 (1.30)	**0.654**	0.089	-0.424
Coward	57.6	3.49 (1.26)	**0.625**	0.158	-0.223
Vengeful	32.7	3.06 (1.12)	**0.592**	0.172	0.141
Shallow	37.3	3.01 (1.16)	**0.587**	0.136	-0.224
Embarrassment	35.7	2.96 (1.11)	**0.409**	0.220	0.089
Lonely	65.4	3.69 (1.06)	0.008	**0.830**	-0.078
Isolated	66.7	3.66 (1.07)	0.135	**0.777**	-0.102
Disconnected	49.1	3.28 (1.05)	0.171	**0.707**	0.201
Lost	74.5	3.96 (1.03)	0.252	**0.510**	-0.308
Nobel	11.9	2.31 (1.05)	-0.84	-.097	**0.745**
Strong	12.7	2.09 (1.13)	-0.151	0.011	**0.720**
Dedicated	22.1	2.71 (1.08)	0.285	0.042	**0.608**
Brave	11.2	1.88 (1.08)	-0.257	-0.064	**0.563**

Bold indicates that a certain item represents a specific subscale.

The construct validity of the SOSS-SF was also tested through CFA, which examines the model fit using several fit indices. Table 3 shows the threshold of fit indices and the findings of CFA in this study. Most of the fit indices were within acceptable levels, except for Goodness of fit index (GFI) although it was approaching the threshold. This support the fit of the model and the three-factor structure, which ultimately support the construct validity of the SOSS-SF. The only fit index that did not support the fit of our model is Chi square (CMIN) p-value (Table 3). However, CMIN p-value is very sensitive to sample size, and thus, most researchers and scientists do not consider it as a reliable test for model fit (Barrett, 2007; Schermelleh-Engel et al., 2003). Rather, "CMIN/degrees of freedom" value, along with other fit indices, is considered a better index of model fit (Barrett, 2007; Schermelleh-Engel et al., 2003). All items had factor loadings higher than 0.3 and they were significant (p < 0.05), except "dedicated" item (See Figure 1). However, we kept this item because it showed good results in exploratory factor analysis (had a factor loading of 0.608) and in item analysis. Also, we tried to run the CFA without this item, but it did not improve the fit indices significantly.

Cronbach's alpha and item analysis were performed on the three subscales to estimate reliability (internal consistency) of SOSS-SF. Stigmatizing, isolation, and glorification subscales showed a Cronbach's alpha of 0.81, 0.71, and 0.68 respectively. This means that the subscales have acceptable levels of internal consistency, except for glorification subscale although it was approaching the acceptable level of 0.70.

The mean score of the LOSS was 5.63 ± 1.85 out 12 with a passing rate of 55%. Thirty students had a score of 5 out of 12. Table 4 shows that students had more difficulty in items related to signs/symptoms and risk factors of suicide. Most of the students (80%) answered the item about seeking help from a psychiatrist or psychologist correctly.

Pearson correlation was used to estimate the significance, strength, and direction of relationship between LOSS and the three subscales of SOSS-SF (See Table 5). LOSS was not significantly associated with all subscales. Stigmatization and glorification subscales were significantly and negatively correlated (r = -0.245, p = 0.003). Stigmatization and Isolation subscales were significantly and positively correlated (r = 0.325, p < 0.001). Isolation and Glorification were not significantly correlated (r = -0.143, p = 0.085). Table 5.

4. Discussion

This study was conducted to assess the psychometric properties of the Arabic version of the SOSS-SF and LOSS. Among the Jordanian university students, only 11.3% had a history of suicide attempt and 11.3% had a family member with a history of suicide attempt. Suicidal attempt prevalence rate is similar to a Turkish sample of university students who reported a 12.6% and 8.5% for self-suicidal attempt and family history of suicidal attempt respectively (Öztürk and Akin, 2018). Also, it is similar
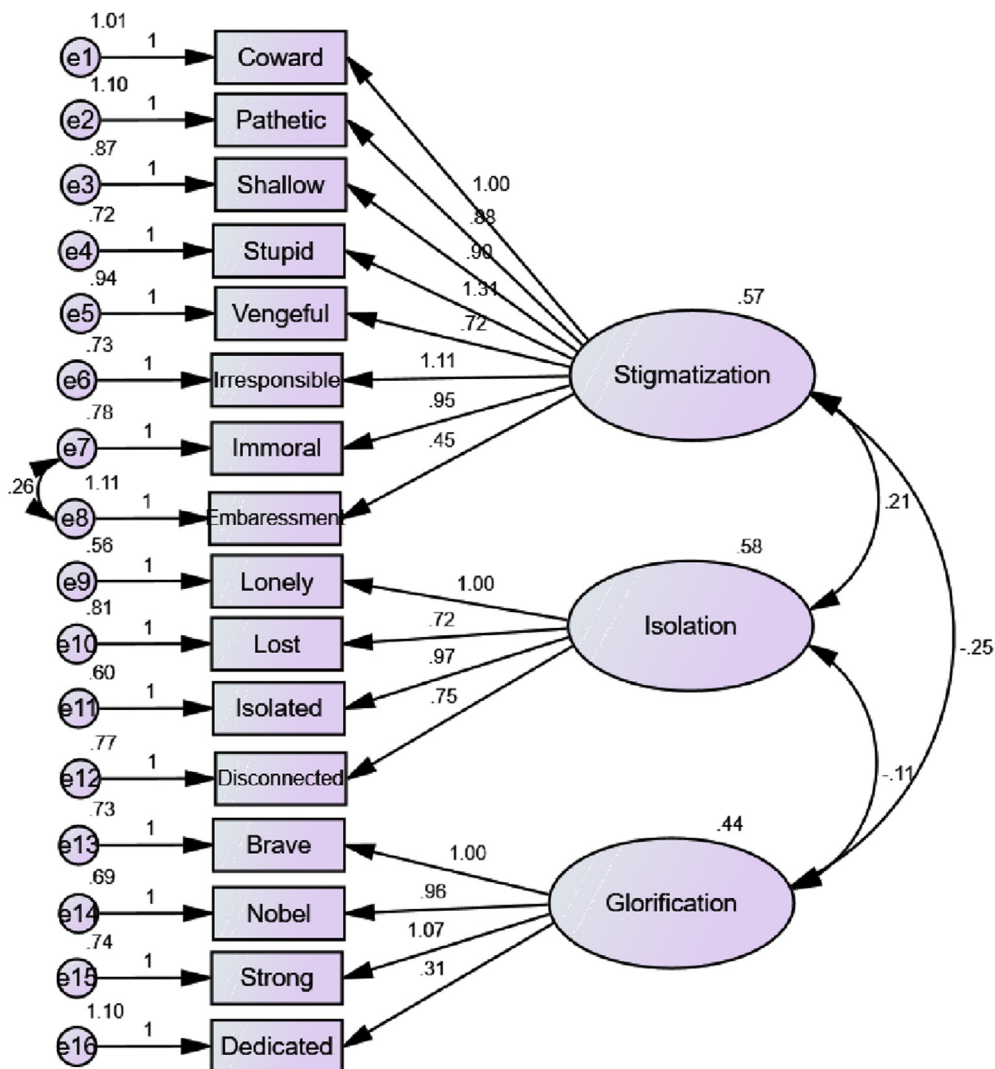

Figure 1. Confirmatory Factor Analysis for the Stigma of Suicide Scale-short form (SOSS-SF).

Table 4. Correct responses to items from the literacy of suicide scale (N = 160).

Item	Percentage correct
Seeing a psychiatrist or psychologist can help prevent someone from suicide (T)	80.6
There is a strong relationship between alcoholism and suicide (T)	67.5
Not all people who attempt suicide plan their attempt in advance (T)	59.4
Most people who suicide are psychotic (F)	50.0
People who have thoughts about suicide should not tell others about it (F)	48.1
Very few people have thoughts about suicide (F)	46.3
A suicidal person will always be suicidal and entertain thoughts of suicide (F)	45.6
Talking about suicide always increases the risk of suicide (F)	40.0
If assessed by a psychiatrist, everyone who kills themselves would be diagnosed as depressed (F)	38.8
People who want to attempt suicide can change their mind quickly (T)	31.3
People who talk about suicide rarely kill themselves (F)	28.7
Men are more likely to die by suicide than women (T)	27.0

to the prevalence rate (10.72%) among Chinese university students (Li et al., 2014).

Isolation subscale had the highest approval rate among the three SOSS-SF subscales, meaning that Jordanian university students attribute suicide to depression or social isolation more than stigmatizing or glorifying it. Similar results were found in studies conducted in Australia, China, and Turkey (Batterham et al., 2013b; Han et al., 2017; Öztürk et al., 2017; Öztürk and Akin, 2018). The approval rate of stigmatization items among Jordanian students was significantly higher than Australian students and Australian public community (Batterham et al., 2013a,b). This could be related to the Arabic collectivist culture that include higher level of stigma toward mental illness and suicide (Al Ali et al., 2017; Al Matarneh and Altrawneh, 2014; Ismayilova et al., 2013; Rayan and Jaradat, 2016). The mean scores of three SOSS-SF subscales in our study were very similar to the mean scores of Chinese students (Han et al., 2017). On the other hand, the Australian population showed higher mean scores of attribution of isolation and significantly lower stigmatizing mean scores (Batterham et al., 2013b). This may explain the effect of collectivist culture (Arabic & Chinese Vs Western & Australian) and culture beliefs on stigmatizing attitudes toward suicide.

Students in this study showed relatively low suicide literacy level as measured by 55% passing rate of the LOSS, with a mean score of 5.63 out 12. However, this literacy level is very similar to the passing rate of Chinese students (mean score = 5.83, 53%) in a study conducted by Han et al. (2017). Suicide literacy level among Jordanian students was higher than their Turkish counterparts who had a 36.88% passing rate (Öztürk and Akin, 2018). On the other hand, Australian students and Australian community had the highest passing rate with over than 60% (Batterham et al., 2013a,b). Overall, Jordanian students had difficulty in answering items related to signs/symptoms and risk factors of suicide, and found questions related to seeking help or treatment to be easier than others. This is consistent with the Turkish and Australian samples (Batterham et al., 2013b; Öztürk and Akin, 2018). Stigma, lack of knowledge and other socio-cultural factors could relate to lower suicide literacy rate

Table 5. Correlation matrix of the major concepts in the study (N = 160).

	Isolation	Glorification	Stigmatization
Glorification	-0.143		
Stigmatization	0.325**	-0.245**	
LOSS	-0.076	-0.060	-0.050

$**P < 0.01$.

among Jordanian students. So, it is important to conduct suicide awareness campaigns in Jordanian universities to improve literacy level about suicide and to decrease level of stigma toward suicidal people. Future plans may include the development of public awareness campaigns focused on the deficits in knowledge and most prevalent stigmatizing attitudes, along with training of key staff or gatekeepers (in clinical, workplace, educational and other settings) to provide more supportive environments to assist individuals who are experiencing suicidal thoughts or have engaged in a suicide attempt.

Reliability analysis showed that stigmatizing and isolation subscales showed acceptable levels of internal consistency (Cronabach's alpha >0.70). The results were consistent with previous studies on the English version (Batterham et al., 2013a,b), Turkish version (Öztürk et al., 2017), and Chinese version (Han et al., 2017). The glorification subscale was approaching acceptable levels, but it was less than previous studies. This could be related to the small number of items (4) in this subscale. Also, several students struggled with understanding the Arabic item of "dedicated" and its association with suicide. So, in future studies this item should be given extra attention (e.g. clarifying it and give examples) during data collection. Construct validity of SOSS-SF was supported in this study as the exploratory factor analysis results showed that there are three factor structure consistent with the original three subscales: Stigmatizing, Isolation, and Glorification subscales. In addition, the same items in the original subscales grouped together in our study. This is consistent with the English, Turkish, and Chinese versions of the SOSS-SF (Batterham et al., 2013b; Han et al., 2017; Öztürk et al., 2017; Williams et al., 2018). Construct validity was also supported by the results of CFA, which showed acceptable levels of fit indices. This is the first study that tested the construct validity of the SOSS-SF using CFA. So, we could not compare CFA results with previous studies. CFA requires very large sample size, and our sample is considered relatively small to this type of analysis. This may explain why some fit indices did not reach optimal levels.

Limitations of the study include the use of convenience sampling method and recruitment from one university, which may increase the risk of selection bias, decrease the representativeness, and limit the generalizability of results. Another limitation is the relatively small sample size, especially when conducting EFA and CFA, because these types of analyses require a large sample size. Otherwise, the factor structure and model fit could be affected negatively. So, future studies should use larger sample sizes with random sampling methods and multi-setting recruitment. As the sample was university students, the results of psychometric properties would be more applicable to the young people and the highly educated, rather than the general population. Future studies should assess the psychometrics of the Arabic version of SOSS-SF and LOSS on different populations such as the public community and health-related professions, which may help to support the psychometric properties and strength of these scales. Another limitation is related to the nature of the cross-sectional studies that prevented us from assessing different types of reliability such as test-retest reliability.

This study provides evidence for psychometric properties of the Arabic version of the SOSS-SF and LOSS and now could be used to assess suicide and stigma literacy among young populations in Arabic countries.

Declarations

Author contribution statement

M. Aldalaykeh: Conceived and designed the experiments; Performed the experiments; Analyzed and interpreted the data; Contributed reagents, materials, analysis tools or data; Wrote the paper.

H. Dalky, M. Rababa: Conceived and designed the experiments; Analyzed and interpreted the data; Contributed reagents, materials, analysis tools or data; Wrote the paper.

G. Shahrour: Conceived and designed the experiments; Performed the experiments; Contributed reagents, materials, analysis tools or data; Wrote the paper.

References

Al Ali, N.M., Alqurneh, M.K., Dalky, H., Al-Omari, H., 2017. Factors affecting help-seeking attitudes regarding mental health services among attendance of primary health care centers in Jordan. Int. J. Ment. Health 46, 38–51.

Al Matarneh, A.J., Altrawneh, A., 2014. Constructing a scale of future anxiety for the students at public Jordanian universities. Int. J. Acad. Res. 6, 180–188.

Aldalaykeh, M., Al-Hammouri, M.M., Rababah, J., 2019. Predictors of mental health services help-seeking behavior among university students. Cogent Psychol. 6, 1660520.

Barney, L.J., Griffiths, K.M., Jorm, A.F., Christensen, H., 2006. Stigma about depression and its impact on help-seeking intentions. Aust. N. Z. J. Psychiatr. 40, 51–54.

Barrett, P., 2007. Structural equation modeling: judging model fit. Pers. Indiv. Differ. 42 (5), 815–824.

Batterham, P.J., Calear, A.L., Christensen, H., 2013a. The Stigma of Suicide Scale: psychometric properties and correlates of the stigma of suicide. Crisis J. Crisis Interv. Suicide Prev. 34 (1), 13–21.

Batterham, P.J., Calear, A.L., Christensen, H., 2013b. Correlates of suicide stigma and suicide literacy in the community. Suicide Life Threatening Behav. 43 (4), 406–417.

Calear, A.L., Batterham, P.J., Christensen, H., 2012. The Literacy of Suicide Scale: Psychometric Properties and Correlates of Suicide Literacy. Unpublished manuscript.

Chan, W.I., Batterham, P., Christensen, H., Galletly, C., 2014. Suicide literacy, suicide stigma and help-seeking intentions in Australian medical students. Australas. Psychiatr. – Bull. Royal Aust. New Zealand Coll. Psychiatr. 22 (2), 132–139.

Corrigan, P., 2004. How stigma inter- feres with mental health care. Am. Psychol. 59, 614–625.

Corrigan, P.W., River, L.P., Lundin, R.K., Uphoff Wasowski, K., Campion, J., Mathisen, J., et al., 2000. Stigmatizing attributions about mental illness. J. Community Psychol. 28, 91–102.

Costello, A.B., Osborne, J.W., 2005. Best Practices in exploratory factor analysis: four recommendations for getting the most from your analysis. Practical Assess. Res. Eval. 10 (7), 1–9.

Han, J., Batterham, P.J., Calear, A.L., Wu, Y., Shou, Y., van Spijker, B.A.J., 2017. Translation and validation of the Chinese versions of the suicidal ideation attributes scale, stigma of suicide scale, and literacy of suicide scale. Death Stud. 41 (3), 173–179.

Ismayilova, L., Hmoud, O., Alkhasawneh, E., Shaw, S., El- Bassel, N., 2013. Depressive symptoms among Jordanian youth: results of a national survey. Community Ment. Health J. 49, 133–140.

Jorm, A.F., 2000. Mental health literacy: public knowledge and beliefs about mental disor- ders. Br. J. Psychiatry 177, 396–401.

Jorm, A.F., Griffiths, K.M., Christensen, H., Korten, A.E., Parslow, R.A., Rodgers, B., 2003. Providing information about the effectiveness of treatment options to depressed people in the community: a randomized controlled trial of effects on mental health literacy, help-seeking and symptoms. Psychol. Med. 33, 1071–1079.

Li, Z.Z., Li, Y.M., Lei, X.Y., Zhang, D., Liu, L., Tang, S.Y., Chen, L., 2014. Prevalence of suicidal ideation in Chinese college students: a meta-analysis. PloS One 9 (10), e104368.

Link, B.G., Phelan, J.C., 2006. Stigma and its public health implications. Lancet 367, 528–529.

National Alliance on Mental Illness, 2013. Mental Illness Facts and Numbers. Reviewed by Ken Duckworth, Retrieved (August, 2014) from: http://www.nami.org/Template. cfm?Section=By_Illness.

Öztürk, A., Akin, S., 2018. Evaluation of knowledge level about suicide and stigmatizing attitudes in university students toward people who commit suicide. J. Psychiatr. Nurs. 9 (2), 96–104.

Öztürk, A., Akin, S., Durna, Z., 2017. Testing the psychometric properties of the Turkish version of the stigma of suicide scale (SOSS) with a sample of university students. J. Psychiatr. Nurs. 8 (2), 102–109.

Rayan, A., Jaradat, A., 2016. Stigma of mental illness and attitudes toward psychological help-seeking in Jordanian University students. Res. Psychol. Behav. Sci. 4, 7–14.

Schermelleh-Engel, K., Moosbrugger, H., Müller, H., 2003. Evaluating the fit of structural equation models: tests of significance and descriptive goodness-of-fit measures. Methods Psychol. Res. Online 8 (2), 23–74.

Substance Abuse and Mental Health Services Administration, 2017. Results From the 2017 National Survey on Drug Use and Health: Mental Health Findings. Retrieved September 1, 2018, from. https://www.samhsa.gov/data/report/slides-2017-nsduh -annual-national-report.

Townsend, M., 2014. Essentials of Psychiatric Mental Health Nursing: Concepts of Care in Evidence-Based Practice. F.A Davis, Philadelphia.

Williams, C.L., Cero, I., Gauthier, J.M., Witte, T.K., 2018. Examination of the latent factor structure and construct validity of the stigma of suicide scale-short form. Death Stud. 42 (10), 616–626.

World Health Organization, 2018. Suicide. Retrieved September 15, 2018, from. http:// www.who.int/news-room/fact-sheets/detail/suicide.

World Health Organization, 2019. Suicide Facts. Retrieved March, 2019, from. https:// www.who.int/news-room/fact-sheets/detail/suicide.

Zawawi, J.A., Hamaideh, S.H., 2009. Depressive symptoms and their correlates with locus of control and satisfaction with life among Jordanian college students. Eur. J. Psychol. 5 (4), 71–103.