Measuring Mental Health Literacy of Teacher: A Pilot Study

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Abstract: *Suicidal behaviors of children and young people are a major public health concern. In Portugal, the increasing awareness of this problem is well reflected by the implementation of the first national suicide prevention plan from 2013 to 2017. One of its main goals is to increase information and education about mental health in schools. By use of a setting approach and empowerment strategies, we pretend to develop the teachers' and educators' skills to adequately handle with new situations. To analyse the psychometric characteristics of instrument designed to assess mental health of Portuguese teachers. The instrument has been developed to monitor the learning results of teacher training in a massive open online course (MOOC). Teachers (n=1144) were recruited online by using a link from the platform Qualtrics. Informed consent was obtained before enrolment in the study. Items of the questionnaire Mental Health Literacy QLSM were developed after a screening of literature and exploratory studies. The statistical program SPSS 22 was used for data analysis. Descriptive statistics was complemented with inferential statistics by application of the Kaiser-Meyer-Olkin (KMO>0.60) and Bartlett`s tests of sphericity (p<0.001). Exploratory factor analysis of QLSM in five factors and 51.1% of variance explained and KMO was .919. The results show adequate psychometric characteristics of the instrument, indicating high content validity and reliability, and good internal consistency for the questionnaire. This allows the use of QLSM in future teacher training programmes*

Keywords: *psychometric tests, questionnaires, teacher training, mental health literacy*

1. Introduction

One of the major goals of the current Portuguese school health programme (*Programa Nacional de Saúde Escolar, PNSE-2015)* is to promote healthy lifestyles and improve health literacy in the educational community encompassing all students from pre-school to secondary schools. To achieve this objective, it is therefore required to adequately qualify the teaching staff, i.e. via teacher training. Teacher training programmes however need to consider more than skills in obtaining, understanding and using health information and decision-making abilities (Loureiro & Miranda, 2010; Beardslee & Gladstone, 2014). In addition, the existence of the first Portuguese national plan for suicide prevention (*Plano Nacional de Prevenção do Suicídio 2013-2017*) reflects that awareness of the issue suicide has been increasing. This national plan calls for actions that aim for improved information and education about mental health in schools.

Addressing the school setting is reasonable for obvious reasons. Children and adolescents spend a considerable amount of their time in this setting. The majority of people suffering from mental health difficulties, or suicidal ideation and suicidal behaviors are common in school age (Scott, 2010). If students at suicidal risk are detected early, suicidal events become preventable what in turn results in improved cost effectiveness for a community (Shaffer & Gould, 2009).

Faced with poor literacy levels in mental health there is need to develop and implement teacher training strategies that support the reduction of future disease burden and socioeconomic costs. The goal of this study was to develop and verify the validity and reliability of instrument that allow for the assessment of the teacher's mental health literacy (*QLSM – Literacia em saúde mental*). The tools were developed for use in a massive open online course (MOOC) that aims to enable and empower teachers to adequately deal with suicide in school.

Raising mental health literacy levels among individuals and communities is important for several reasons, for example, to reduce stigma, improve access to mental health care services and overcome barriers, to less the burden of professionals, to increase knowledge about mental disorder and support systems, and to reduce suicide (Jorm, 1997; Jorm 2011; Nutbeam 2008; Zarcadoolas, Pleasant, & Greer 2012). Although schools health education is widely implemented in Portugal, findings from an exploratory study revealed in 2011 that only 3% of teachers and educators reported that they were trained in suicide prevention while 79% of the respondents highlighted the need for guidance and support to identify and prevent behaviors of suicidal risk (Almeida, Pedrosa-de-Jesus & Pereira, 2013).

This study aims at the validation of the *QLSM* instrument. The instrument is part of a project whose objectives are to analyze the knowledge of teachers and their needs for training to recognize the behavior of students at risk, to encourage teachers to search for support by referring students to mental health experts, and to identify myths about mental diseases order to reduce the social stigma. The QLSM tools include vignette in which teachers are asked to identify mental disorders. In this article, we outline the main procedures and methodological options for the validation of the instrument *QLSM*, as well as the key considerations and limitations of these analyses.

2. Methodology

The analysis aimed to identify and test the psychometric properties of the questionnaire *QLSM*, which aim to assess a selection of literacy dimensions of teachers from pre-school up to secondary public schools. The instrument was developed to monitor learning effects of a teacher training in a Massive Open Online Course (MOOC).

2.1. Sample

Data was collected from n=1144 teachers (81.7% female and 18.3% male) aged between 24 and 69 (mean= 45.57; standard deviation = 7.31). The sample was recruited via social networks and school boards from of all Portuguese school districts (including Portugal mainland and the archipelagos Madeira and Azores).

Data were collected by an online survey through a link on the Qualtrics Survey platform after obtaining informed consent from the participant. For the analysis, completed questionnaires were included in the study

2.2. Questionnaire *QLSM*

For the rating of the questionnaire, a five point Likert scale was used in each of the instrument. Item responses ranged from one ('strongly disagree') to five ('strongly agree'). The mental health literacy questionnaire *QLSM* consisted of 22 items, complemented with four vignettes telling life stories of students with mental health problems to analyse the capacity of teachers to recognize core characteristics of these problems. The respondents were asked for an assessment of what was going on in the story. Answering options were: 'depression', 'schizophrenia', 'social phobia', 'obsessive-compulsive disorder', 'teenage phase', 'I do not know what is happening', and 'other'.

The questionnaire was developed in different stages: A screening and review of the literature was followed by the item specification and a pre-test analysis with a panel of fourteen experts. The expert panel consisted of two mental health professionals, two researchers, two teachers each from the four Portuguese levels of compulsory school education (Pre-school, 3 to 5 years old; first cycle, 6 to 9 year old; second cycle, 10 to 11 years old; third cycle, 12 to 14 years old; and high school; 15 to 17 years old). For the pretest, we used the method of think aloud. According to Clark and Peterson (1986), this is one of the methods of inquiry that gives insight into the participant's cognitive processes while they are performing a set of specified tasks. The pretest was followed by a content validation that was done by a panel of three experts and required accordance of at least 90% among these members (Krippendorff, 1980).

2.3. Data analysis

Data was analysed with the statistical software programme SPSS, version 22, IBM Corporation (2013). Data validity was analysed by use of principal component analysis (PCA). Sampling adequacy was measured with Kaiser-Meyer-Olkin (KMO) and Bartlett's test of sphericity. The KMO allows knowing the proportion of variance of the data that can be considered common to all variables and assigned to a common factor. In our analysis, a value of >0.6 was regarded as appropriate (Maroco, 2003; Reis, 2001). Bartlett's test compares the observed correlation matrix with the identity matrix and checks redundancy between the variables. Hypothesis was rejected when p <.001 (Field, 2005; Schmitt, 2011). Considered as criteria for validity was rated by use of the following criteria: Total variance explained > 50% and factor loadings >0.35, by use of varimax rotation (Nunnaly, 1978; Comrey & Lee, 1992; Pestana & Gageiro, 2003).

2.3. Ethical considerations

The study was done in accordance with the ethical guidelines for Internet Mediated Research (British Psychological Society, 2003) and the guidelines of the American Psychological Association (APA, 2013). Informed consent was obtained from the participants prior to enrolment and after they have been informed about the purpose and objectives of the study. Withdrawal from the study was possible at any time. For data protection and confidentiality, all data has been anonymized.

3. Results

The initial sample consisted of 1179 teachers of which 35 (3%) were excluded because of missing data in more than 50% of the questionnaire's responses. The final sample (see Table 1) was n= 1144 teachers, with 935 (81.7%) female and 209 (18.3%) of male respondents aged between 24 and 69 years (Mean = 45.57, Standard Deviation = 7.31). The marital status of the sample was as follows: Married (62%), single (15.8%), divorced (14.9%), de facto unions (5.9%), widowed (1.2%) and other (0.2%). As to academic qualifications, the most frequent was bachelor degree (63.7%), followed by master degree/postgraduate (32.3%), baccalaureate (2.5%), PhD degree (1.0%) and other (0.4%). Most of the teachers were working in secondary school (n = 589, 51.5%), followed by 1st cycle (15.8%), 2nd cycle (14.4%), pre-school (6.6%) and special education schools (5.6%). The number of years of professional experience ranged from 1 month to 42 years, with an average of 21.83 years (SD = 7.87). The most frequent occupational status was teacher/subject teacher/trainer with n=871, followed by coordinator or director of a class (n = 88, 7.7%), coordinator of a department or a discipline (n = 83, 7.3%) and director of school (n = 51, 4.5%) (see Table 2). Portuguese school subjects are grouped and represented by numbers (see table 3). The most frequent group was *'110'* (17.9%) (from 6 to 9 years olds). Other groups with >5% were *'100'* (9.0%) (from3 to 5 years), *'300'* (8.6%) (from 13 to 17 years old), *'520'* (6.9%) (from 13 to 17 years), *'600'* (6.2%), *'330'* (5.9%) and *'620'* (5.4%). The most frequent school districts (see Table 4) were Lisbon (16.7%) and Porto (15.8%), followed by Leiria (8.7%), Aveiro (8.1%), Setúbal (7.3%) and Braga (6.7%), all with more than 70 participants. There were also participation from the Portuguese islands of Madeira and the Azores.

Validity QLSM

The factor analysis of the main components of the QLSM questionnaire resulted in the extraction of five factors. These factors explained 51.1% of the total variance explained, with a contribution of 28.5%, 7.5%, 5.3%, 5.1%, and 4.7% of the first five factors. The internal consistency showed a Cronbach's alpha of .82 (Table 1). Both KMO = .92 and Bartlett's tests of sphericity (p<.001) were accomplished.

We assigned the following descriptions to the factors: Factor 1: 'myths about mental disorders', factor 2: 'precipitating/triggering factors', factor 3: 'hospitalization due to a mental disorder', factor 4: 'risk factors' and factor 5: 'myths in the school environment'.

Regarding the descriptive results of the vignettes, teachers generally identified the mental diseases or disorders of vignette 1 - depression, vignette 2 - schizophrenia, vignette 3 - social phobia and vignette 4 - obsessive compulsive disorder (Table 2).

Table 1: Factors and factor loadings of the *Literacia em Saúde Mental QLSM* questionnaire. Items are presented in the tested version in Portuguese. A tentative but not validated translation in English is provided in brackets.

	Fators and factor loadings				
Item	**F1**	**F2**	**F3**	**F4**	**F5**
7. *Depressão e tristeza são a mesma coisa.* [Depression and sadness are the same.]	.725				
12. *Pânico e medo são a mesma coisa.* [Panic and anxiety are the same.]	.717				
8. *Quem vai a consultas de pedopsiquiatria tomará medicação o resto da vida*. [Who visits consultations in child psychiatry will take medication the rest of his/her life.]	.636				
14. *Transtorno mental é sinónimo de loucura*. [Mental disorder is synonymous with madness.]	.567				
9. *Fazer psicoterapia demora muito tempo e foca sempre problemas de infância.* [Undergoing a psychotherapy takes a long time and always focuses on childhood issues.]	.536				
11. *A prevenção não funciona. É impossível evitar as doenças mentais.* [Prevention does not work. It is impossible to prevent mental illness.]	.530				
22. *As pessoas com uma doença mental devem ser mantidas no hospital.* [People with a mental disorder should be kept in a hospital.]	.472				
10. *Quem tem síndrome de pânico não sai de casa.* [Who shows syndroms of panic does not leave home.]	.392				
2. *A infância e a adolescência são, de forma geral, os períodos mais felizes na vida da maioria das pessoas, pelo que as situações de doença mental são raras e não devemos "psiquiatrizar" em excesso.* [Childhood and adolescence are, in general, the happiest time in the life of most of the people. Situations of mental disorders are, therefore, rare and should not be "psiquiatrized" in excess.]		.717			
3. *Os problemas de saúde mental são causados pela pessoa que deles padece.* [Mental health problems are caused by the person who suffers from them.]		.693			
5. *A capacidade de recuperação das crianças que sofrem algum tipo de problema de saúde mental é muito maior que nos adultos, pelo que apenas, em casos excecionais, são necessárias intervenções especializadas nesta área.* [The capacity of children suffering from mental health problems to recover is much bigger than in adults. Therefore, only in exceptional cases, targeted interventions are needed in this area.]		.647			
4. *Ter um transtorno mental é sinal de fraqueza.* [Having a mental disorder is a sign of weakness.]		.629			
1. *Alunos com uma doença mental nunca ficarão melhor.* [Students with a mental disorder will never getting better.]		.504			
16. *Alunos com transtorno bipolar não conseguem ter uma vida normal.* [Students with bipolar disorder are not able to have a normal life.]			.726		
15. *Se um aluno admitir que tem problemas, todos irão pensar que é maluco e terá de ir para um hospital por um tempo muito longo.* [If a student admits that he/she has problems, everyone will think that he/she is crazy and likely to go to hospital for a very long time.]			.643		
17. *Pessoas com manias têm transtorno obsessivo-compulsivo.* [People with madness have a obsessive-compulsory disorder.]			.633		
18. *Ter de ir a um psiquiatra significa que o caso deve ser muito grave.* [When one has to go to a psychiatrist, that means that the case must be very serious.]			.441		
13. *Transtornos como depressão e ansiedade podem impedir o aluno de estudar.* [Disorders such as depression and anxiety can hinder the student from learning.]				.699	
6. *As crianças têm problemas de saúde mental.* [Children have mental health problems.]				.673	
19. *Abusar de álcool e drogas pode causar transtornos mentais.* [Alcohol and drug abuse can cause mental disorders.]				.607	
20. *A doença mental afeta apenas alguns indivíduos.* [Mental disorders affect only few people.]					.782
21. *Os problemas de saúde mental são incomuns nos estudantes.* [Mental health problems are uncommon in students.]					.665
Variance explained (%)	28.5%	7.5%	5.3%	5.1%	4.7%
Total variance explained (%)	51.1%				
Cronbach's Alpha (per dimension)	.80	.73	.63	.44	.45
Cronbach's Alpha (overall)	.82				

Table 2: Frequency of Vignettes

Item	1	2	3	4	5	6	7
1. Mary is 14 years old. Over the last weeks, she has been feeling very down…	950 (83.0%)	1 (0.1%)	2 (0.2%)	2 (0.2%)	105 (9.2%)	72 (6.3%)	12 (1.0%)
2. John is 15 years old and lives with his parents and grandmother…	40 (3.5%)	737 (64.4%)	130 (11.4%)	86 (7.5%)	18 (1.6%)	125 (10.9%)	8 (0.7%)
3. Peter is 6 years old and lives with his stepfather and mother…	7 (0.6%)	9 (0.8%)	899 (78.6%)	12 (1.0%)	25 (2.2%)	130 (11.4%)	62 (5.4%)
4. Sarah is 13 years old and lives at home…	6 (0.5%)	22 (1.9%)	42 (3.7%)	1005 (87.8%)	8 (0.7%)	52 (4.5%)	9 (0.8%)

4. Discussion

The questionnaire filled out the KMO assumptions (> 0.60) and the Bartlett sphericity test (p <0.001). The total variance explained was satisfied. Factorial loads were higher than 0.40. Regarding reliability, Cronbach's alpha values were higher than 0.60 QLSM ($\alpha = 0.82$).

The results of our analysis support the construct validity and fidelity of the *QLSM* instrument and demonstrate that the tool is valid and reliable measures that allow to identify and evaluate the acquisition of mental health literacy of Portuguese teachers and educators who are working from pre-school to high school in Portuguese public schools.

The following section refers to the factors of the questionnaire. Regarding *QLSM*, the results tend to responses in a favour of disagreeing with the items' questions, except for questions addressing risk factors.

With the *QLSM* scale, we found the factors: F1 "Myths about mental disorders", F2 "Precipitating/triggering factors", F3 "Hospitalization due to a mental disorder", F4 "Risk factors", and F5 "Myths in the school environment". The factors clearly highlight the need teachers for information about mental health.

Overall, the most important results identified that many teachers were able to identify mental illness/mental disorders in the vignettes, but they show lack of mental health literacy. In order to approach the problem of suicide attempts by young people, and the lack of studies on the gatekeeping function of schools, this study contributes with findings that clearly demostrates the need for teacher training in the area of mental health promotion. This study has resulted in evidence-based tools that allow for reporting and monitoring the teachers' practices and to be used in teacher training programmes. In addition and as outlook, another purpose of these questionnaires is going to be the development of a 'Teacher Capacity Assessment' Index for mental health literacy that will enable the identification of teachers who are in need for further training to equip them with adequate skills for the school context.

This study has some limitations, namely its complexity, the vulnerability of the subject and the use of a convenience sample with the inherent bias because of recruiting respondents with greater sensitivity and experiences on the topics addressed. Future studies should include representative samples at the regional level, including a random sample and verify the psychometric performance of the *QLSM* scale.

Conclusions and future implications

In order to tackle existing mental health stigmas, as well as to know the capacity of the teacher, questionnaire was developed to be implemented in massive open online courses (MOOC) teacher and educator training. This study aimed at developing and validating the questionnaire and at providing instruments to improve teacher training in the context of distance learning. Bearing in mind the inherent limitations of this type of study, it will be necessary to foolow up this work with e.g. randomized studies to improve the data and the tools. This study was designed to develop instruments that are used (as pre-test and post-test) in a training programme for teachers in a MOOC environment, structured by modules, that can be used to complement the traditional modes of teacher training.

Based on the results of this study the following is recommended:

• To promote the development of training programs for professionals in education in order to increase the number and abilities schools to act as gatekeeper for students with mental health disorders.

• To promote the teachers' literacy for mental health in order to decrease the rate of students at risk.

• To ensure that all schools are equipped with teachers that are aware of the need for training what supports the implementation of any preventive intervention.

• To complement higher education curricula with training modules addressing behaviors to mental health.

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