DOI: https://doi.org/10.53350/pjmhs211561551

**ORIGINAL ARTICLE**

# Mental Health Literacy in Iranian Adolescents

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## ABSTRACT

**Background:** Mental health literacy (MHL) is a relatively ignored determinant of community mental health in Iran, in which its level and determinants should be addressed.
**Aim:** To investigate MHL and its components among Iranian adolescents.
**Methods:** A cross-sectional study was conducted. After multistage cluster random sampling, 500 high school students were enrolled. Previously validated Persian version of theMHL Scale (MHLS) was used for data collection. In addition, data on socio-demographic variables were also collected. Adolescents with an MHL score of less than 60% of the achievable score were considered as at-risk of mental health illiteracy. Relevant statistical analyses were used to determine the MHL level and its association with sociodemographic variables.
**Results:** Overall prevalence of being at-risk of mental health illiteracy was estimated at 71.5 % (95% CI: 67.1, 75.6). Prevalence of being at-risk of stigmatization, inadequate self-help knowledge, and information seeking was 91.2 (95% CI: 88.3, 93.7), 60.3 (95% CI: 59.8, 60.8), and 36.6 (95% CI: 36.1, 37.1), respectively. Having religious beliefs was associated with the stigmatization component (adjusted OR= 2.66, 95% CI: 1.27-5.59).
**Conclusions:** Prevalence of being at-risk of mental health illiteracy is high among Iranian adolescents. Mental disorders are highly stigmatized in Iran.
**Keywords:** Mental Health Literacy, Health Literacy, Adolescent, Iran, Mental Disorder

## INTRODUCTION

Mental disorders are one of the most important causes of morbidity and mortality, affecting 25% of the world's population[1]. In Iran, approximately one in every four individuals suffers from one type of mental disorder, leading it to be considered as one of the most important causes of morbidity in the ages of 10-40[2].

Health literacy is a major indicator of health, including mental health[3]. The study of Young et al. confirms that health literacy and its associated interventions can bring about change in mental health status and health-related behavior through the three theories of Health Belief Model, Transtheoretical Model, and the Theory of Transtheoretical Model/Planned Behavior[4].

Health literacy fails to measure the required knowledge and skills associated with mental health, accordingly, in 1997, Jorm, inspired by health literacy, introduced 'Mental Health Literacy (MHL)' as "the knowledge and beliefs about mental disorders which aid their recognition, management, or prevention"[5]..
Studies on measuring the levels of MHL and its determinants across different societies and countries are indicative of its insufficiency over the majority of regions[6,7]. Most studies have concerned themselves with measuring the MHL of health specialists; therefore, there is a dire need of measuring MHL in the general population.

Notwithstanding the fact that the area under discussion has received much attention in developed countries, its levels and determining factors remain to be studied thoroughly in the middle east[6,8]. Limited research has been conducted on mental health in Iran. In the study by Sayarifard et al. (2015), the degrees of MHL about major depressive disorder was investigated among medical students. Only 35.6% of the participants managed to recognize this disease properly. Family was found to be the main source of help-seeking, and fear of stigmatization as the most important obstacle to help-seeking[9]. Noroozi et al. measured the average MHL in Boushehr adults, using mental health literacy scale (MHLS). The results indicated an insufficient MHL score (102 out of 160) and was identified as the predictor of all the components of health-promoting behavior[10].

Due to the significance of MHL and its unique role in mental health, and the lack of sufficient pertinent studies in Iran, especially in the important and large population of Iranian adolescents, the authors conducted a study aimed at the investigation of the degree of MHL and its associated components among Iranian adolescents, to be used as a basis for the future planning and interventions.

## MATERIALS AND METHODS

This cross-sectional study was conducted among high school students in Shiraz. A total of 50517 students were studying in 606 high schools across Shiraz. The inclusion criterion was being a high school student in Shiraz.Students of rural areas, as well as those attending remedial and adult education were excluded from the study.

The sample size was estimated following Cochran's formula for prevalence estimation studies[11]. Considering a type I statistical error of 5%, level of precision of 15%, an assumed prevalence of 35% (estimated during the pilot study on 100 high school students) and a response rate of 65% the minimum sample size was estimated as 500 individuals. Afterwards, a proportional to size multi-stage random cluster sampling was conducted. Ten high schools were randomly selected and students were randomly selected in these schools.

The study protocol was approved by the Institutional Review Board of Shiraz University of Medical Sciences (IR.SUMS.MED.REC.1397.005). Informed consent was confirmed by the IRB. This research was conducted

according to principles of the Declaration of Helsinki. The participants filled the informed consent forms prior to completing the questionnaires.

This study employed the previously validated Persian version of the Mental Health Literacy Scale (MHLS)[12]. This scale is a 35-item questionnaire developed by O'Connor, and approved in terms of validity and reliability[13,14]. The grading scale of this instrument ranges from 35 to 160. This questionnaire examines different components of mental health literacy, namely: 1- the ability to recognize certain disorders and a range of diverse mental illnesses (scores 10-40); 2- knowledge and beliefs regarding the risk factors and causes of mental disorders (scores 9-45); 3- knowledge and beliefs concerning self-help interventions (scores 2-8); 4- knowledge of how to seek mental health-related information (scores 4-20); 5- an attitude facilitating recognition (scores 7-35); 6- knowledge and beliefs concerning accessible professional help (scores 3-12)[14].

The students also answered questions regarding age (14-19), gender, grade of high school (tenth, eleventh, twelfth), field of study (mathematics, science, humanities, technical, and vocational), father's education (less than high school, high school, associate's, bachelor's, master's and above), mother's education (like father's), father's occupation (employed, self-employed, retired, unemployed), mother's occupation (employed, retired, housewife), parents' marital status (married, divorced, separated, widow/widower, remarried), family's financial status (income less/more than or equal to expenses). Furthermore, the students were asked to reply to single questions regarding their general perceived health status, degree of religious beliefs, history of mental disorders, history of receiving psychological services, and the type of services received (counseling, psychotherapy, pharmacotherapy, and other services). The urban area of education (ranging from one to four, in terms of socio-economic status respectively) and type of school attended (public, state standard, exceptional talents, private) were also entered into the data collection forms by the interviewers.

The data was collected by two female interviewers familiar with medical sciences, following a field research process. The interviewers were trained on becoming familiar with the questionnaire, how to interact with the students, and how the data collection process worked. They were then assessed and asked to respond to standard and pre-fabricated scenarios. Further training followed if needed. For data collection, subsequent to arrangements and upon approval of the principal, the interviewers entered the classroom. The aim of the study and the questionnaire's structure were explained to the students who were asked to complete the questionnaire anonymously, with the teacher present. Moreover, they were assured that whether they choose to complete the questionnaires or not, their educational assessment would not be affected in any way. The participants were free to participate or not. The completion time of each questionnaire was 15 to 20 minutes on average.

The data was submitted to the software and were prepared after data cleansing. Stata (StataCorp, College Station, Texas, US) was used for data analysis. Due to the negligible missing percentage (below 5%), they were left out of the analyses. Students with an overall and section-specific score of below 60% were considered "at risk" and those with higher scores were considered "safe".

Subsequent to the initial analysis and assessment, the classification of independent variables for two- and three-variable analyses, was modified in some cases, namely, age (14-16, 17-19), school type (private and public in one group, state standard and exceptional talents in one group), field of study (technical and vocational in one group), parents' level of education (below high school, high school, and associate in one group, bachelor's and higher in one group), parents' marital status (married in one group, other in one group), father's occupation (employed and self-employed in one group, retired and unemployed in one group), mother's occupation (employed and retired in one group, housewife in one group), religious belief (none and mild in one group, average and strong in one group), history of receiving psychological services (positive in one group, negative and doesn't know in one group), type of psychological services received (pharmacotherapy in one group, counseling and psychotherapy in one group, other services in one group).

The prevalence of at-risk population and its 95% confidence interval was estimated using binominal distribution. T-test and chi-squared were employed for the bivariate analysis, and binary logistic regression was adopted for multivariate analyses. Variables with P values of less than 0.25 in bivariate analyses were included in the multivariate analysis. Backward elimination was used for fitting of the multivariate model. The significant cut-off point was set at 0.05.

## RESULTS

The response rate of the participants was 91.2%. A number of 456 questionnaires were analyzed. The participants comprised of 247 male (54.6%) and 205 female (45.3%), with an average age of 16.4 (CI: 16.3-16.6). Table 1 portrays the studied demographic, social, and psychological factors in detail (Table 1).

The mean score of mental health literacy of the participants was 98.63±11.29 (35-160). Mean and standard deviation of scores for the ability to recognize certain disorders, knowledge of self-help interventions, knowledge of accessible professional help, and knowledge of searching for mental health-related information were 27.57±4.79 (10-40), 5.26±1.05 (2-8), 8.33±1.37 (3-12), and 14.3±2.98 (4-20), respectively. Furthermore, the mean of scores concerning knowledge of the risk factors and causes of mental disorders and an attitude facilitating recognition, were 29.48±4.89 (9-45) and 14.08±5.99 (7-35).

A histogram was drawn for all the components to show normal distribution for both mean scores and separate scores.

As mentioned earlier, the participants were divided into the two groups of at risk and safe based on a 60% score rate. Table 2 shows the rate of individuals with at risk scores, considering MHL components and the foregone variables (table 2). At risk individuals had a 71.5% (95% CI: 67.1, 75.6) rate. Out of all components, participants had the lowest MHL scores in stigma (91.2% (95% CI: 88.3, 93.7) in the at risk group). The participants maintained the

highest MHL score for mental health information seeking (36.6% (95% CI: 36.1, 37.1) in the at-risk group).

Table 2 also represents the differences between subgroups of the studied variables in each component (Table 2). MHL was significantly higher in males for mental disorder recognition (p-value=0.001), whereas females were significantly more knowledgeable about self-help interventions (p-value<0.001). Also, The field of study significantly influenced the knowledge of self-help interventions in students and those studying science had a higher MHL compared to humanities majors, concerning this component (p-value<0.001). Also, individuals who considered their religious beliefs as average and strong, showed a significantly higher level of stigma for mental disorders (p-value<0.001), while individuals with a history of mental disorders or receiving psychological services, showed a lower level of stigma compared to others (p-value=0.001).

The results of multivariate analyses are presented in Table 3 in detail (Table 3). For these models, individuals with stronger religious beliefs (OR=2.91, CI=1.42-5.96), or with a history of mental disorders (OR=2.29, CI=1.24-4.23), or those with a record of receiving any psychological services (OR=3.16, CI=1.53-6.49) were more prevalently at risk for having a low level of stigma. Furthermore, risk of a lower recognition score was higher in the participants studying technical and vocational fields (OR=1.19, CI=1.00-1.42) or with housewife mothers (OR=1.53, CI=0.98-2.37); while, having a low recognition score was less prevalent in females (OR=0.53, CI=0.36-0.77).

## DISCUSSION

The investigation over the degree of MHL based on the associated personal, parental, and psychological factors conducted from high school students of Shiraz has revealed that the majority have low MHL, that has reached to 4/5$^{th}$ in stigma, and variables like gender, father's employment status, perceived health status, degree of religiosity, history of mental disorders, and history of receiving psychological services, have been significantly affected different components of it.

The insignificant relationship between most studied variables and MHL can be due to the absence of comprehensive and targeted programs for increasing awareness and improving the attitudes towards mental disorders across the majority of Iranian administrative and educational systems.The possible reasons for the lack of design and implementation of specific MHL-promotion programs can be among the followings: not prioritizing mental health in policy-making, insufficient budget allocation for mental health promotion in schools as well as other social strata, the shortage of relevant specialists, and unfamiliarity of the specialists and the public with this area[15].

Having an employed father as one of the few socio-economic mediators affecting MHL of the students, had a protective effect on knowledge of risk factors and self-help. Considering the fact that income has no impact on MHL, the reason can be connected not to the economic but the social and mental aspects of the father's employment. Fathers are important examples in creating schemas of security and self-efficacy. Studies show that father's unemployment can negatively impact the feeling of security, resilience, self-efficacy, and father-child relationship[16,17]. For instance, the mediator of creating resilience by the father's employment does not probably operate via economic factors[18], but it is claimed that it might operate through creating a social support environment by the father and an appropriate father-child relationship[16]. Hence, father's employment status can significantly influence the stated components through these mediators.

Considering the relationship between religious beliefs and stigma in MHL, as stated by many other studies, individuals with stronger religious beliefs bear greater stigma towards mental disorders and the mentally ill[19,20]. Religious belief, as a fundamental belief, by which most of our thoughts, behaviors, and perceptions is determined, can also impact our health in stigma to mental disorders, and furthermore, such individuals had a better knowledge of the mental disorder risk factors. In light of the positioning theory, individuals within a certain group have a sense of belonging toward each other, bringing about an increase in their reciprocal sympathy, leading to their habitus being composed accordingly, which eventually can decrease stigmatization within its members[25]. Therefore, the sympathy of individuals who have gone through similar experiences, towards individuals in similar conditions will increase, and their stigma to mental disorders will decline.

Youth with a history of receiving any psychological services also had a significantly lower stigma. However, although a history of psychological services is significantly associated with stigma, yet changes in the adjusted odds ratio compared to beliefs, from determining the cause of illness all the way to treating it. Studies investigating the stigmatization of mental disorders in Muslim societies have indicated high rates of stigma[21,22], proving to be a major impediment to receiving health services in such societies[23]. Some possible causes may be social stigma and prominent cultural roles of the family and clergy in groups with strong religious beliefs[23,24]. Nevertheless, causes of stigma in the Iranian society, especially in religious groups, requires more profound research, byconsidering the cultural diversities among Muslim countries, as well as the emergence of modernism in Iranian metropolises. This is of great importance for health authorities and policy-makers, as, studies suggest that the higher the rates of stigma to mental disorders, the less individuals will seek out standard mental health services.

The present study observed a significant relationship between having a history of psychological disorder and a decline crude odds ratio, indicate a serious confounding of this relationship by variables of religious beliefs and a history of mental disorders. It is possible, therefore, that other variables not measured in the present study act as residual confounders in connection with a history of psychological services and stigma.

The present study had some limitations. As a cross-sectional study, this study cannot possibly hold causal relationships. Nonetheless, elaborating on the results has provided some clues for future longitudinal studies. On the other hand, due to the lack of disease registry systems, measuring the actual prevalence of mental disorders was

not feasible, which may yield to inaccurate comparison between having a history of mental disorders and components associated with MHL.

This is one of the first studies measuring MHL in the Iranian society. Furthermore, unlike similar studies, participants with a history of mental disorder were not excluded from the study but investigated as a variable, instead. The present study was one of the first to investigate variables like religious belief and family variables in relation to MHL in young adults. Moreover, using a quantitative instrument, this study enabled a better comparison between the variables and MHL and its components.

With regard to a random cluster sampling and the population size, the results of the present study can be generalized to youth aged 14-19 in Iranian metropolises, however one must exercise caution in generalizations to populations with different demographics and sociocultural status.

## CONCLUSIONS

Most Iranian young adults suffer from deficient mental health literacy. Having a mental disorder is severely stigmatized in this population. More than half of the population are incapable of self-help of their mental health. The majority of them, however, knew where to obtain accurate mental health-related information. With regard to lack of sufficient studies on this subject in Iran, further studies are required to investigate the factors responsible for inadequate mental health literacy in Iran.

**Acknowledgments:** This study was conducted as the partial fulfilment of an MPH thesis of the author AB, financially supported by Shiraz University of Medical Sciences (IR.SUMS.MED.REC.1397.005)

**Declaration of Interest:** No potential conflict of interest was reported by the authors.

**Funding:** This work was supported by Shiraz University of Medical Sciences under Grant 15747 as a partial fulfillment of MPH thesis of Arezoo Behbood.

## REFERENCES

1. Organization WH. Mental Disorders Affect One in Four People: The world health report. 2001.
2. Vandad Sharifi M, Hajebi A, Radgoodarzi R. Twelve-month prevalence and correlates of psychiatric disorders in Iran: the Iranian Mental Health Survey, 2011. Archives of Iranian medicine. 2015;18(2):76.
3. Parker RM, Williams MV, Weiss BD, Baker DW, Davis TC, Doak CC, et al. Health literacy-report of the council on scientific affairs. Jama-Journal of the American Medical Association. 1999;281(6):552-7.
4. Yang J. CHAPTER I. AN INTRODUCTION TO THE QUEST FOR IMPROVED ADOLESCENT MENTAL HEALTH. THERE AND BACK AGAIN: A TALE OF TRANSLATION IN PROMOTION OF ADOLESCENT MENTAL HEALTH. 2019.
5. Jorm AF, Korten AE, Jacomb PA, Christensen H, Rodgers B, Pollitt P. "Mental health literacy": a survey of the public's ability to recognise mental disorders and their beliefs about the effectiveness of treatment. Medical journal of Australia. 1997;166(4):182-6.
6. Tay JL, Tay YF, Klainin-Yobas P. Mental health literacy levels. Archives of psychiatric nursing. 2018;32(5):757-63.
7. Kutcher S, Wei Y, Coniglio C. Mental health literacy: past, present, and future. The Canadian Journal of Psychiatry. 2016;61(3):154-8.
8. Jorm A. Mental health literacy. American Psychologist. 2012;67(3):231-43.
9. Sayarifard A, Ghadirian L, Mohit A, Eftekhar M, Badpa M, Rajabi F. Assessing mental health literacy: What medical sciences students' know about depression. Medical journal of the Islamic Republic of Iran. 2015;29:161.
10. Noroozi A, Khademolhosseini F, Lari H, Tahmasebi R. The mediator role of mental health literacy in the relationship between demographic variables and health-promoting behaviours. Iranian Journal of Psychiatry and Behavioral Sciences. 2018;12(2).
11. Yamane T. Statistics: An introductory analysis. 1973.
12. Nejatian M, Tehrani H, Momeniyan V, Jafari A. A modified version of the mental health literacy scale (MHLS) in Iranian people. BMC psychiatry. 2021;21(1):1-11.
13. Wei Y, McGrath PJ, Hayden J, Kutcher S. Measurement properties of tools measuring mental health knowledge: a systematic review. BMC psychiatry. 2016;16(1):297.
14. O'Connor M, Casey L. The Mental Health Literacy Scale (MHLS): A new scale-based measure of mental health literacy. Psychiatry research. 2015;229(1-2):511-6.
15. Malekafzali H, Bahreini F, Alaedini F, Forouzan A. Health system priorities based on needs assessment & stakeholders' participation in IR Iran. Hakim Research Journal. 2007;10(1):13-7.
16. Bacikova-Sleskova M, Benka J, Orosova O. Parental employment status and adolescents' health: the role of financial situation, parent-adolescent relationship and adolescents' resilience. Psychology & health. 2015;30(4):400-22.
17. Powdthavee N, Vernoit J. Parental unemployment and children's happiness: A longitudinal study of young people's well-being in unemployed households. Labour economics. 2013;24:253-63.
18. Pedersen CR, Madsen M, Köhler L. Does financial strain explain the association between children's morbidity and parental non-employment? Journal of Epidemiology & Community Health. 2005;59(4):316-21.
19. Wesselmann ED, Graziano WG. Sinful and/or possessed? Religious beliefs and mental illness stigma. Journal of Social and Clinical Psychology. 2010;29(4):402-37.
20. Ciftci A, Jones N, Corrigan PW. Mental health stigma in the Muslim community. Journal of Muslim Mental Health. 2013;7(1).
21. Tabassum R, Macaskill A, Ahmad I. Attitudes towards mental health in an urban Pakistani community in the United Kingdom. International Journal of Social Psychiatry. 2000;46(3):170-81.
22. Khan Z. Attitudes toward counseling and alternative support among Muslims in Toledo, Ohio. Journal of Muslim Mental Health. 2006;1(1):21-42.
23. Youssef J, Deane FP. Factors influencing mental-health help-seeking in Arabic-speaking communities in Sydney, Australia. Mental Health, Religion & Culture. 2006;9(1):43-66.
24. Aloud N, Rathur A. Factors affecting attitudes toward seeking and using formal mental health and psychological services among Arab Muslim populations. Journal of Muslim Mental Health. 2009;4(2):79-103.
25. James M. Positioning theory and strategic communication: A new approach to public relations research and practice: Routledge; 2014.

Table 1: Demographic characteristics of study population

| Variable | Category | Frequency% | Variable | Category | Frequency% |
|---|---|---|---|---|---|
| **Age** | 15 | 27(5.9) | **Father's Employment** | Employed | 138(31.6) |
| | | | | Self-employed | 187(42.8) |
| | 16 | 153(33.8) | | clerk | 57(13.0) |
| | 17 | 219(48.5) | | Unemployed | 21(4.8) |
| | 18 | 53(11.7) | | Retired | 34(7.8) |
| **Gender** | Male | 247(54.6) | **Mother's Employment** | Employed | 87(19.5) |
| | | | | Retired | 10(2.2) |
| | Female | 205(45.4) | | Housework | 349(78.3) |
| **Type of School** | Public | 265(58.8) | **Family Income** | as much as cost | 328(73.1) |
| | Private | 24(5.3) | | less than expense | 77(17.1) |
| | Selective Public | 162(35.9) | | more than expense | 44(9.8) |
| **Grade** | $10^{th}$ | 234(52.0) | **Religious beliefs** | None | 28(6.2) |
| | | | | Low | 39(8.6) |
| | $11^{th}$ | 183(40.7) | | Moderate | 263(58.3) |
| | $12^{th}$ | 33(7.3) | | High | 121(26.8) |
| **Parent's marital status** | Separated | 7(1.7) | **Perceived health condition** | Perfect | 224(49.8) |
| | Divorced | 18(4.3) | | Good | 203(45.1) |
| | Married | 382(91.0) | | Poor | 23(5.1) |
| | deceased father | 10(2.4) | | | |
| | deceased mother | 3(0.7) | | | |
| **Educational Field** | Math | 94(20.8) | **History of mental disorder** | Positive | 38(8.4) |
| | Experimental | 102(22.6) | | Negative | 346(76.4) |
| | Literature | 159(35.3) | | don't know | 69(15.2) |
| | Art | 49(10.9) | | | |
| | Technical | 47(10.4) | | | |
| **Mother's Education** | below diploma | 126(28.1) | **History of receiving psychiatric service** | Positive | 48(10.7) |
| | Diploma | 205(45.8) | | Negative | 388(86.2) |
| | Associate | 29(6.5) | | Don't know | 14(3.1) |
| | Bachelor | 48(10.7) | | | |
| | master's or higher | 40(8.9) | | | |
| **Father's Education** | below diploma | 134(30.2) | **Type of received psychiatric service** | Pharmacotherapy | 7(7.1) |
| | Diploma | 167(37.6) | | Consultation | 49(49.5) |
| | Associate | 18(4.1) | | Psychotherapy | 4(4.0) |
| | Bachelor | 56(12.6) | | Other | 38(38.4) |
| | master's or higher | 69(15.5) | | | |

Table 2: The estimated percentage of "at risk" participants by MHL dimensions

| **Personal** | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MHL Dimension | Gender | | Type of school | | Grade | | | Urban Area | | | | Educational field | | | |
| | M | F | PP | SP | 10th | 11th | 12th | 1 | 2 | 3 | 4 | Ma | Sc | HU | T&V |
| OS | 72 | 70 | 73 | 66 | 73 | 68 | 69 | 68 | 71 | 72 | 77 | 71 | 65 | 73 | 73 |
| | 0.67 | | 0.12 | | 0.56 | | | 0.42 | | | | 0.59 | | | |
| Rec | 55 | 40 | 48 | 47 | 48 | 47 | 63 | 50 | 59 | 44 | 49 | 42 | 46 | 48 | 57 |
| | 0.001 | | 0.82 | | 0.20 | | | 0.31 | | | | 0.19 | | | |
| SH | 53 | 69 | 67 | 47 | 60 | 59 | 63 | 48 | 73 | 61 | 67 | 55 | 51 | 70 | 57 |
| | 0.000 | | 0.000 | | 0.90 | | | 0.001 | | | | 0.005 | | | |
| PH | 49 | 54 | 52 | 51 | 52 | 50 | 54 | 50 | 59 | 47 | 57 | 51 | 47 | 55 | 52 |
| | 0.35 | | 0.86 | | 0.89 | | | 0.32 | | | | 0.69 | | | |
| IS | 36 | 36 | 38 | 33 | 30 | 43 | 42 | 35 | 36 | 36 | 42 | 42 | 29 | 36 | 38 |
| | 0.95 | | 0.27 | | 0.01 | | | 0.70 | | | | 0.27 | | | |
| RF | 56 | 58 | 61 | 50 | 56 | 58 | 54 | 54 | 55 | 55 | 64 | 63 | 53 | 55 | 59 |
| | 0.62 | | 0.03 | | 0.91 | | | 0.30 | | | | 0.38 | | | |
| Stigma | 92 | 90 | 90 | 92 | 93 | 89 | 88 | 94 | 80 | 95 | 91 | 95 | 92 | 89 | 90 |
| | 0.54 | | 0.44 | | 0.25 | | | 0.005 | | | | 0.41 | | | |

| | | | | | | **Mental** | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MHL Dimension | Health Condition | | | Religious Belief | | Hx of Mental Dx | | | Hx of Psy service | | Type of Psy service | | |
| | P | G | E | W | S | $Y^1$ | $N^1$ | D | $Y^2$ | $N^2$ | Med | Cons | O |
| OS | 82 | 71 | 70 | 72 | 71 | 63 | 72 | 74 | 69 | 71 | 67 | 74 | 79 |
| | 0.44 | | | 0.81 | | 0.46 | | | 0.70 | | 0.70 | | |
| Rec | 57 | 47 | 49 | 49 | 48 | 45 | 50 | 43 | 38 | 50 | 33 | 43 | 70 |
| | 0.65 | | | 0.94 | | 0.57 | | | 0.07 | | 0.03 | | |
| SM | 61 | 61 | 60 | 56 | 61 | 58 | 61 | 59 | 65 | 60 | 67 | 55 | 77 |
| | 0.99 | | | 0.36 | | 0.89 | | | 0.42 | | 0.08 | | |
| PH | 61 | 55 | 49 | 54 | 51 | 55 | 52 | 50 | 44 | 53 | 83 | 51 | 56 |
| | 0.31 | | | 0.65 | | 0.90 | | | 0.17 | | 0.31 | | |
| IS | 57 | 43 | 29 | 49 | 34 | 58 | 33 | 42 | 41 | 36 | 67 | 49 | 44 |
| | 0.002 | | | 0.02 | | 0.008 | | | 0.39 | | 0.55 | | |
| RF | 65 | 62 | 52 | 64 | 54 | 55 | 55 | 70 | 57 | 57 | 50 | 60 | 67 |
| | 0.07 | | | 0.21 | | 0.09 | | | 0.98 | | 0.67 | | |
| Stigma | 87 | 92 | 92 | 82 | 93 | 82 | 92 | 93 | 81 | 93 | 83 | 85 | 87 |

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 0.68 | | | 0.002 | | | 0.06 | | 0.001 | | | | 0.94 | | |
| | | | | | | | **Familial** | | | | | | | | |
| MHL Dimension | Mother's ED | | | Father's ED | | | Marital status | | Mother's EM | | Father's EM | | Income | | |
| | BD | D&A | B &above | BD | D&A | B &above | Married | other | E | UE | E | UE | Less | Eq | More |
| OS | 73 | 73 | 62 | 73 | 70 | 70 | 71 | 71 | 67 | 72 | 71 | 71 | 73 | 71 | 75 |
| | 0.14 | | | 0.76 | | | 1.00 | | 0.32 | | 0.98 | | 0.81 | | |
| Rec | 53 | 48 | 41 | 51 | 50 | 43 | 49 | 42 | 40 | 51 | 49 | 40 | 47 | 48 | 52 |
| | 0.21 | | | 0.41 | | | 0.42 | | 0.05 | | 0.19 | | 0.84 | | |
| SM | 63 | 61 | 53 | 62 | 66 | 50 | 60 | 61 | 56 | 61 | 58 | 75 | 69 | 59 | 59 |
| | 0.30 | | | 0.01 | | | 0.97 | | 0.30 | | 0.02 | | 0.24 | | |
| PH | 50 | 52 | 53 | 49 | 53 | 53 | 52 | 47 | 56 | 50 | 51 | 55 | 55 | 50 | 61 |
| | 0.92 | | | 0.77 | | | 0.57 | | 0.30 | | 0.65 | | 0.34 | | |
| IS | 33 | 39 | 35 | 38 | 36 | 36 | 35 | 47 | 35 | 37 | 36 | 38 | 40 | 36 | 36 |
| | 0.57 | | | 0.95 | | | 0.15 | | 0.61 | | 0.79 | | 0.78 | | |
| RF | 60 | 58 | 51 | 58 | 59 | 54 | 57 | 58 | 54 | 58 | 55 | 71 | 68 | 55 | 52 |
| | 0.41 | | | 0.62 | | | 0.93 | | 0.46 | | 0.02 | | 0.12 | | |
| Stigma | 91 | 92 | 89 | 93 | 92 | 88 | 91 | 89 | 88 | 92 | 91 | 93 | 92 | 92 | 91 |
| | 0.58 | | | 0.30 | | | 0.69 | | 0.15 | | 0.67 | | 0.96 | | |

Abbreviations. OS: overall score, Rec: the ability to recognize mental disorders, SM: knowledge and beliefs concerning self-help interventions, PH: knowledge and beliefs concerning accessible professional help, IS: knowledge of how to seek mental health-related information, RF: knowledge and beliefs regarding the risk factors and causes of mental disorders, stigma: an attitude facilitating recognition, Mother's ED: mother's educational level, Father's ED: father's educational level, Mother's EM: mother's employment status, Father's EM: father's employment status, BD: below diploma, D&A: diploma and associate, B & above: bachelors and above, E: employed, UE: unemployed, less: less than expenses, Eq: equal to expenses, More: more than expenses

Table 3. Correlates of MHL among Iranian Adolescents

| **MHL Dimension** | **Variable** | **Crude OR (95% CI)** | **Adjusted OR (95% CI)** |
|---|---|---|---|
| SH | Type of School | 0.43 (0.29-0.65) | 0.50 (0.32-0.76) |
| | Father's employment status | 2.09 (1.10-3.95) | 2.02 (1.05-3.89) |
| Rec | Gender | 0.53 (0.36-0.77) | 0.50 (0.34-0.73) |
| | Educational field | 1.19 (1.00-1.42) | 1.17 (0.97-1.40) |
| | Mother's employment status | 1.53 (0.98-2.37) | 1.49 (0.94-2.37) |
| IS | Gender | 1.46 (1.09-1.96) | 1.44 (1.06-1.94) |
| | Religious belief | 0.55 (0.33-0.92) | 0.53 (0.31-0.89) |
| | Perceived Health condition | 1.80 (1.30-2.50) | 1.71 (1.23-2.38) |
| RF | Health condition | 1.42 (1.03-1.95) | 1.36 (0.98-1.89) |
| | Type of School | 0.65 (0.44-0.96) | 0.65 (0.44-0.97) |
| | Father's employment | 1.96 (1.06-3.63) | 1.80 (0.97-3.37) |
| | History of mental disorder | 1.56 (1.07-2.28) | 1.50 (1.02-2.20) |
| Stigma | Religious belief | 2.91 (1.42-5.96) | 2.66 (1.27-5.59) |
| | History of mental disorder | 2.29 (1.24-4.23) | 1.74 (0.96-3.14) |
| | Use of psychiatric service | 3.16 (1.53-6.49) | 2.40 (1.10-5.25) |

Abbreviations. SH: knowledge and beliefs concerning self-help interventions, Rec: the ability to recognize mental disorders, IS: knowledge of how to seek mental health-related information, RF: knowledge and beliefs regarding the risk factors and causes of mental disorders, stigma: an attitude facilitating recognition, Crude OR: crude odds ratio, Adjusted OR: adjusted odds ratio