

## Urdu translation and validation of PHQ-9, a reliable identification, severity and treatment outcome tool for depression

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### Abstract

**Objective:** To translate and validate the self-report brief version of Patient Health Questionnaire-9 in Urdu.

**Methods:** The descriptive study was carried out at the Combined Military Hospitals in Gilgit and Lahore, and Pakistan Naval Ship Shifa Hospital in Karachi, from February to May 2016, and comprised of patients recruited from primary healthcare centres of the three cities. Standardised procedures including forward-translation, back-translation, expert panel discussion, face validation, pilot testing, and target population validation were done. SPSS 21 was used for statistical analysis.

**Results:** Of the 293 patients, 164(56%) were males and 129(44%) were females. Exploratory factor analysis revealed a single factor solution with minimum factor loading being 0.63. Cronbach's alpha for the scale was 0.91 and split-half reliability was 0.77. Females were more likely to have depressive symptoms compared to male participants ( $p < 0.01$ ). Participants' area of dwelling also influenced their reported symptoms ( $p < 0.01$ ).

**Conclusions:** Patient Health Questionnaire-9 Urdu scale was found to be a valid and reliable tool to screen, rate and monitor outcomes of depressive illness in primary healthcare settings in Pakistan.

**Keywords:** PHQ-9, Urdu, Depression, Primary healthcare, Pakistan. (JPMA 68: 1166; 2018)

### Introduction

Depression remains the second leading cause of years lived with disability (YLD) globally, posing an ever increasing need for early detection and treatment at the level of primary healthcare centres (PHC)<sup>1</sup> where almost 50% of such patients are missed.<sup>2</sup> PHC physicians need to be trained at screening depressive illnesses, followed by treatment for the milder cases and making referrals for the more severe ones.<sup>3</sup>

The prevalence of depression and anxiety disorders has been reported to be between 32% and 66.3% in Pakistan.<sup>4</sup> The PHC physicians were not optimally trained to diagnose and deal with such varied presentations,<sup>5</sup> which led to a greater chance of these signs and symptoms to be disregarded in emergency as well as the general inpatient settings in Pakistani hospitals.<sup>6,7</sup>

Instruments have been developed worldwide to aid PHC physicians. However, the length of time required to administer them and to score them has remained a big issue due to busy schedules and complicated methods.<sup>8</sup>

Patient Health Questionnaire-9 (PHQ-9) is one of the few

instruments available worldwide that have exhibited diagnostic validity and reliability with a sensitivity of 81.3% and a specificity of 85.3%.<sup>9</sup>

Urdu being the national language of Pakistan is spoken and understood in almost all regions of the country, apart from the millions of people around the world.<sup>10</sup> There had been criticism on most of the Urdu instruments related to the procedures adapted for validation, as very few of them were found to be adequately evaluated.<sup>11</sup> On the basis of personal observation, most of them were lengthy and did not have very simple scoring methods. PHQ-9 has become the most common screening instrument recently,<sup>12</sup> and was also used to monitor treatment at the starting, predetermined intervals, and at termination, thus helping make clinical choices and improving therapeutic strategies.<sup>13</sup>

The current study was planned to translate the instrument into Urdu, following Acquadro's suggestions,<sup>14</sup> and later validating it in the Pakistani population.

### Subjects and Methods

This descriptive study was conducted at the department of psychiatry at the Combined Military Hospital (CMH) Gilgit from February to May 2016. The validation phase was taken up at the psychiatry departments of two other tertiary care hospitals i.e. CMH Lahore, and Pakistan Naval Ship (PNS) Shifa Hospital, Karachi along with CMH Gilgit. The approval of ethics committees of all the three institutions was obtained prior to commencement of the

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study.

Out of the 17 different methods of linguistic validation,<sup>14</sup> we followed the American Association of Orthopaedic Surgeons (AAOS) guidelines<sup>13</sup> for our cross-cultural adaptation in order to maintain both language and cultural perspectives.

In the first phase, two translators, both bilingually proficient and having Urdu as their mother tongue, translated the instrument into Urdu. First translator (T1) had a psychiatric background and knew about the purpose of the task, while the second translator (T2) was naive to psychiatry as well as to the reason for translation. They presented difficulties in translating the instructions part of the questionnaire, as well as the questions part, including the repetition of phrases in English and difficulty in converting them to befitting Urdu ones.

In the second stage both the T1 and T2 translated versions along with translational difficulties faced by the translators were discussed with a third observer, a consultant psychiatrist. Translated version T12 was developed by merging the two versions. Difficulties encountered in the translation process were compared, documented and resolved. The instructions for the questionnaire had four choices for the person filling it. Exactly translating the third choice gave the impression that the complaint lasted for more than half a day. To end this ambiguity, we added the phrase 'but less than a week' in Urdu in the second option.

'Feeling down' in point 2 had troubled both the translators. No exact translation was available. The term used in Urdu was the same as depressed, but a consensus was reached and the whole phrase was translated as such to convey the basic idea easily. In the third stage, two professors of English literature, absolutely blind to the purpose of translation and original English version of PHQ-9, having Urdu as their mother tongue, back-translated the instrument into English, independently, and presented a written report.

An overall consensus was reached in the fourth stage, the expert committee meeting between the translators, reverse translators, subject experts and language experts including three English language and one Urdu language expert. Every point of the questionnaire was discussed, including the instructions and end notes. Point no 3 of PHQ-9 generated a discussion as the reverse translators expressed their difficulty in translating multiple similar words and phrases. This was highlighted in some other points too. More difficulty was faced in the longer sentences, but the overall final impact was agreed to be

conveying the idea accurately. An Urdu language expert improved the face validity radically, thus morphing our translation into a more 'polished and smooth' version of the original T12 while preserving the original context (Figure-1).

In stage five, after informed consent, the translated Urdu version of PHQ-9 was administered on 50 adults, both men and women volunteers in the PHC department of the hospital after explaining to them the purpose of the exercise and obtaining their consent. They were then interviewed to indicate any difficulty faced in terms of unclear and inexplicable items in the questionnaire. However, none expressed any difficulty in understanding or comprehending the instrument.

In the second phase involving the validation process, volunteers reporting to the PHC outpatient department (OPD) of tertiary care hospitals in Gilgit, Karachi, and Lahore were administered the final PHQ-9 along with Institute of Clinical Psychology (ICP) Subjective Well-Being Scale (SWBS)<sup>15</sup> and a demographic proforma. Their informed consent was obtained after explaining confidentiality and the purpose of study. The demographic proforma included information on the volunteer's age, gender, marital status, number of children, number of siblings, birth order, occupation, and family history of psychiatric and physical illness. The subjects were grouped into Punjab, Karachi, rural Sindh, Khyber Pakhtunkhwa (KP), and Gilgit-Baltistan (GB) to assess the association of the native area with the prevalence of major depressive symptoms. Data was analysed using descriptive (mean and standard deviations) and inferential (exploratory factor analysis, Pearson product moment correlation coefficients, independent sample t-test, and one-way analysis of variance [ANOVA]) statistical techniques with SPSS 23.

## Results

Of the 293 subjects, 164(56%) were males and 129(44%) were females. Overall age range was 16-81 years. Among the subjects, 95(32.4%) belonged to Karachi, 102(34.8%) to Lahore, and 68(23.2%) to Gilgit. Of the total, 196(66.9%) were married and 32(10.9%) had 16 years of education while 49(16.7%), 58(19.8%), and 89(30.4%) had 14, 12, and 10 years of education, respectively. Profession-wise, 90(31%) were employed in the military, 63(21.5%) were housewives, and 47(16%) were students. Out of total participants, 75(25.6%) reported a positive family psychiatric history, 39(13.3%) reported hypertension, 20(6.8%) suffered from diabetes mellitus (DM), 13(4.4%) had ischaemic heart disease (IHD), 10(3.4%) had asthma, 9(3%) had tuberculosis (TB), 15(5.1%) suffered from

**Table:** Mean, standard deviation, item total correlations, and factor loading for PHQ-9 obtained from Principal Component Factor Analysis (N = 293, Items = 10).

| S. No.     | Item No. | Factor Loading | M     | SD   | Item-Total Correlations |
|------------|----------|----------------|-------|------|-------------------------|
| 1.         | 8.       | 0.77           | 1.74  | 0.96 | 0.75**                  |
| 2.         | 2.       | 0.76           | 1.80  | 1.02 | 0.78**                  |
| 3.         | 6.       | 0.75           | 1.88  | 1.15 | 0.77**                  |
| 4.         | 3.       | 0.73           | 2.20  | 1.12 | 0.76**                  |
| 5.         | 4.       | 0.72           | 1.85  | 1.09 | 0.73**                  |
| 6.         | 1.       | 0.72           | 1.77  | 1.05 | 0.77**                  |
| 7.         | D.       | 0.70           | 1.77  | 1.04 | 0.68**                  |
| 8.         | 5.       | 0.68           | 1.71  | 1.02 | 0.78**                  |
| 9.         | 9.       | 0.67           | 1.51  | 0.91 | 0.70**                  |
| PHQ-D      | 7.       | 0.63           | 1.66  | 0.74 | 0.72**                  |
| Eigenvalue |          |                | 5.64  |      |                         |
| % Variance |          |                | 56.42 |      |                         |

PHQ: Patient Health Questionnaire

Note: \*\* correlation is significant at .01 level.

| PHQ-9                                                                                                                                  |            |          |                         |                     |                  |
|----------------------------------------------------------------------------------------------------------------------------------------|------------|----------|-------------------------|---------------------|------------------|
| گزشتہ دو ہفتوں کے دوران مندرجہ ذیل مسائل سے آپ کتنا پریشان ہوئے؟                                                                       | (اکل نہیں) | (کئی دن) | (تین دن ایک ہفتے سے کم) | (ایک ہفتے سے زیادہ) | (تقریباً روزانہ) |
| ۱۔ روزمرہ کے کاموں میں دلچسپی اور لطف کی کمی۔                                                                                          |            |          |                         |                     |                  |
| ۲۔ اداسی، افسردگی، پشیمانی کا احساس۔                                                                                                   |            |          |                         |                     |                  |
| ۳۔ (۱) نیند کا نا آنا (پ) نیند آنے کے بعد سوتے رہنے میں دشواری (ج) نیند کی زیادتی۔                                                     |            |          |                         |                     |                  |
| ۴۔ بے سبب تھکاوٹ یا کمزوری کا احساس۔                                                                                                   |            |          |                         |                     |                  |
| ۵۔ بلاوجہ جھوک میں کمی یا زیادتی۔                                                                                                      |            |          |                         |                     |                  |
| ۶۔ (۱) شکست خوردگی یا ناگہانی احساس (پ) اپنے خاندان کے افراد کی توقعات پر پورا نہ اترنے کا احساس۔                                      |            |          |                         |                     |                  |
| ۷۔ تہہ مزکورہ کئے میں دشواری پیش آ رہے جیسے اخبار پڑھنے پائی وی دیکھنے میں۔                                                            |            |          |                         |                     |                  |
| ۸۔ اتنی سست روی سے چلنا یا بیٹھنا کہ دوسروں نے اس بات کی انتہا دینی کی ہو۔ یا اس کے برعکس معمول سے کئی گنا زیادہ چلنے پھرنے یا اضطراب۔ |            |          |                         |                     |                  |
| ۹۔ (۱) ذہن میں اس خیال کا بار بار آنا کہ زندگی بے سہارا ہے (پ) ذہن میں اپنی ذات کو نقصان پہنچانے (ضرر رسائی) کے خیالات کا آنا۔         |            |          |                         |                     |                  |

نوٹ:-

اگر آپ نے کسی مسئلے پر (سما) کا نشان لگایا ہے تو یہ بتا ہے کہ ان مسائل کی وجہ سے آپ کا کام کرنے میں تھک کر کا خیال رکھنے اور دوسروں کے ساتھ ملنے جتنے میں کئی مشکل پیش آتی۔

|            |          |                         |                     |
|------------|----------|-------------------------|---------------------|
| (اکل نہیں) | (کئی دن) | (تین دن ایک ہفتے سے کم) | (ایک ہفتے سے زیادہ) |
|            |          |                         |                     |

**Figure:** Urdu version of Patient Health Questionnaire (PHQ).

hepatitis, 31(10.5%) presented with psychiatric problems, and 103(35.1%) visited for other assorted medical problems.

Before running factor analysis, item-total correlations were assessed and the minimum item-total correlation to retain item for factor analysis was  $\geq 0.5$ . All items were highly correlated with the total score ranging from 0.68 to 0.78 (Table). Kaiser-Meyer-Olkin (KMO) sample adequacy value was 0.93 and the Bartlett test result was highly significant ( $p < 0.00$ ).

Exploratory factor analysis with Varimax rotation was performed which ended up with the single factor solution made on a criterion of minimum factor loading of 0.63. All items were clearly clustered into a single domain measuring various dimensions of major depressive disorder. The eigenvalue for the factor was 5.64 that explained 56.42% of the total variance (Table).

Both positive affect subscale ( $p < 0.01$ ) and life satisfaction subscale ( $p < 0.01$ ) of ICP-SWBS negatively and significantly associated with PHQ-9 ( $p < 0.05$ ). Negative affect subscale of ICP-SWBS was positively ( $p < 0.01$ ) and significantly correlated with PHQ-9 ( $p > 0.05$ ).

Cronbach's alpha for PHQ-9 was 0.91. The reliability was further supported by split-half reliability for PHQ-9; part 1 ( $r = 0.86$ ), part 2 ( $r = 0.84$ ) and correlation between two halves ( $r = 0.77$ ), Spearman Brown coefficient was 0.87, and Guttman split-half coefficient was 0.86.

Female participants reported more major depressive disorder symptoms compared to male participants ( $p < 0.001$ ).

Participants' native area significantly influenced their level of major depressive disorder symptoms ( $p < 0.001$ ). Subjects living in GB reported significantly higher level of major depressive disorder symptoms compared to participants living in Punjab ( $p < 0.001$ ) and Karachi ( $p < 0.001$ ). Participant's years of education was also inversely associated with the reported level of major depressive disorder symptoms ( $p < 0.001$ ). The marital status did not influence the intensity of depressive symptoms ( $p = 0.14$ ).

## Discussion

This study was conducted to translate and validate PHQ-9 into Urdu using the AAOS<sup>13</sup> standardised procedure. Factor analysis revealed that the present questionnaire was uniaxial in a sense that all its items were clearly grouped into single domain of depression. A study<sup>16</sup> recommended the item-respondent ratio ranging from 1:3 to 1:10 in order to perform a robust factor analysis. But

in the present study, the sample size was 29 times greater ( $n=293$ ) than total items (10), thus increasing the authenticity of the findings here. It was significantly and negatively correlated with positive affect and life satisfaction, and positively associated with the negative subscales of ICP-SWBS, indicating a good level of discriminant and convergent validity. Similar findings i.e. single-dimensionality of PHQ-9 with acceptable factor loading studies were reported by researchers across the globe.<sup>17-19</sup> Researchers performed a systematic review and found that PHQ-9 was a well-validated measure for detecting and monitoring depression.<sup>20</sup>

In this study, reliability results for PHQ-9 were also found to be satisfactory. Such findings were reported in other studies in Ethiopia,<sup>17</sup> South Korea,<sup>19</sup> and Nepal.<sup>21</sup>

Additionally, women were more likely to have major depressive disorder symptoms compared to men in our sample, which is in line with reported findings.<sup>22</sup> We also found that when a participant's level of education increased, their major depressive disorder symptoms decreased. Another study<sup>23</sup> also reported that low educational levels were significantly associated with depression and higher educational level seemed to work as a protective factor against depression throughout life.

This was the first study of its kind to adapt PHQ-9 into the national language of Pakistan by including sample from four provinces. The major limitation of the study was that it did not include a sample from Baluchistan province and the sample size from KPK was also small in size that made its generalisability limited. Therefore, it is recommended to include population proportionate sample from all provinces of Pakistan to enhance its generalisability at the national level.

## Conclusion

PHQ-9 Urdu was found to be a valid and reliable instrument to screen, rate and monitor depression in Pakistani culture. Additionally, the questionnaire will meet the national need to have a brief and easy to administer and interpret, but standardised instrument to assess depression.

**Disclaimer:** One subject in the study was 16 years old. He was adamant on being included in the study, and we were unable to turn him down. His input has been included in our data despite the fact that he was not eligible for independent consent.

**Conflict of Interest:** None.

**Source of Funding:** None.

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