Measuring the well-being of health care professionals in the Punjab: a psychometric evaluation of the Warwick-Edinburgh Mental Well-being Scale in a Pakistani population

Background: There is growing awareness of the public health importance of the mental well-being of population in general. This study was carried out to examine the wellbeing of Pakistani healthcare professionals, and to evaluate the psychometric properties of Warwick-Edinburgh Mental Well-being Scale in in this population. The well-being of health professionals is likely to influence their care delivery. **Methods:** A cross-sectional survey was carried out from June, 2013 to December, 2014 among 1271 Pakistani health personnel (HCPs) belonging to seven different cities of Punjab province, Pakistan, to examine the acceptability, internal consistency, test-retest reliability and the content and construct validity of the English version of the Warwick-Edinburgh Mental Well-being Scale in a Pakistani population sample. All data were analyzed in SPSS v.21. **Results:** Our analysis demonstrated a unidimensional construct, a high internal consistency (0.89) and test-retest reliability, good convergent validity and easy readability of WEMBS among Pakistani HCPs. The mean on WEMWBS score was 48.1 (9.4) which is lower than general population sample in other nations. Male healthcare professionals scored significantly higher on WEMWBS than their female counterparts ($P < .05$), and older respondents had higher scores. **Conclusion:** The WEMBS appears feasible and acceptable for use in the Pakistani healthcare professionals, and findings from this study indicate its validity and internal consistency. The well-being scores of the health professional respondents were lower than those identified in general population surveys in the UK.

1 **Measuring the well-being of health care professionals in the Punjab: a psychometric**

2 **evaluation of the Warwick-Edinburgh Mental Well-being Scale in a Pakistani population**

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20

21   **Abstract**

22   **Background:**

23   There is growing awareness of the public health importance of the mental well-being of

24   population in general. This study was carried out to examine the wellbeing of Pakistani

25   healthcare professionals, and to evaluate the psychometric properties of Warwick-Edinburgh

26   Mental Well-being Scale in in this population. The well-being of health professionals is likely to

27   influence their care delivery.

28   **Methods:**

29   A cross-sectional survey was carried out from June, 2013 to December, 2014 among 1271

30   Pakistani health personnel (HCPs) belonging to seven different cities of Punjab province,

31   Pakistan, to examine the acceptability, internal consistency, test-retest reliability and the content

32   and construct validity of the English version of the Warwick-Edinburgh Mental Well-being Scale

33   in a Pakistani population sample. All data were analyzed in SPSS v.21.

34   **Results:**

35   Our analysis demonstrated a unidimensional construct, a high internal consistency (0.89) and

36   test-retest reliability, good convergent validity and easy readability of WEMBS among Pakistani

37   HCPs. The mean on WEMWBS score was 48.1 (9.4) which is lower than general population

38   sample in other nations. Male healthcare professionals scored significantly higher on WEMWBS

39   than their female counterparts ($P < .05$), and older respondents had higher scores.

40   **Conclusion:**

41   The WEMBS appears feasible and acceptable for use in the Pakistani healthcare professionals,

42   and findings from this study indicate its validity and internal consistency. The well-being scores

43   of the health professional respondents were lower than those identified in general population

44   surveys in the UK.

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46

47   **Introduction:**

48

49   Subjective or psychological well-being is increasingly recognized as a crucial aspect of overall

50   health that highlights the importance of *positive* mental health. It relates to the classic World

51   Health Organization (WHO) definition of health as more than just the absence of disease;

52   "Health is a state of complete physical, mental and social well-being and not merely the absence

53   of disease or infirmity" [1]. The importance of mental health within overall well-being is

54   emphasized in international policy as the 'foundation for well-being and effective functioning for

55   both the individual and the community' (which) allows individuals to realise their abilities, cope

56   with the normal stresses of life, work productively and fruitfully, and make a contribution to

57   their community.'[2,3]

58

59   Subjective well-being has a long tradition as a key part of the conceptualisation of quality of life

60   [3] and its measurement has been embedded within this construct, with measures of quality of

61   life and of health related quality of life commonly incorporating questions concerning positive

62 and negative affect [4,5] as well as life satisfaction and considerations of fulfilment and purpose,

63 as for instance within the triennial European Quality of Life Survey [6].

64 However, over the past two decades, interest in measuring subjective well-being has expanded,

65 with the emergence of evidence that it can be measured in ways that are valid and reliable [3] ,

66 and here is now a widespread acknowledgement that focusing on the measurement of subjective

67 well-being is an essential part of measuring quality of life that merits particular measures and

68 approaches [7].

69

70 This focus on the positive elements of mental health and functioning is augmenting a previous

71 emphasis on deficits, problems and symptoms. This is evident within psychiatry research, mental

72 health policy and clinical practice [8] where the concepts of recovery and the increasing use of

73 wellbeing measures are increasingly commonly used [9]. Within broader public health and

74 policy it relates to an acknowledgment that promoting wellbeing and independence are essential

75 to preventing ill health, which is of particular relevance in light of the growing burden of

76 long-term conditions [10].

77

78 Within health services, there is a recognition that staff wellbeing is relevant to the quality and

79 safety of healthcare delivery [11] as well as to efforts and expenditure to recruit and retain

80 clinical staff [12]

81

82 The healthcare sector rates highly on important potential causes of work stress [13] with health

83 professionals (in particular nurses) among the occupations reporting the highest rates of work-

84 related stress, depression or anxiety (three-year averages) [14]. An extensive literature has

85   explored stress among health professionals, using measures of psychological distress as well as

86   more conceptually developed and specific tools such as burnout instruments [15]. Stressors that

87   may be evident within health professionals' work include working long and unsocial hours,

88   prolonged and cumulative involvement with seriously ill patients and their relatives, and

89   exposure to organisational conflicts. Even during their training, HCPs are exposed to a plethora

90   of academic, psychosocial and health-related stressors [16]. Medical students and junior doctors

91   have been reported to be at particular risk, but estimates of prevalence vary widely, from 18% to

92   82% [17].

93   Studies among healthcare professionals in Pakistan have reported a high prevalence of anxiety,

94   depression, high stress levels and burn-out, highlighting the need to address the issues of poor

95   job satisfaction, sleep deprivation due to shift patterns, patient overload, authoritarian work

96   relationships and limited peer and social support [18–20].

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101   In line with the growing emphasis on measures of positive health rather than a focus on deficits

102   and problems, it was considered useful to measure the subjective mental well-being of health

103   care professionals in Pakistan. The most widely known measure of mental wellbeing in the UK is

104   the Warwick Edinburgh Mental Well-being Scale (WEMWBS). WEMWBS is a measure of

105   mental wellbeing, developed by the Universities of Warwick and Edinburgh, and funded by NHS

106   Scotland.

107

108   The current study was devised to examine the psychometric characteristics of the WEMWBS

109   measure among English-speaking Pakistani health professionals. This is useful because there is a

110   paucity of psychological and psychiatric rating scales that have been cross-culturally validated

111   for use within Pakistan population [21], and the mental health scales that have been evaluated for

112   use in this population are largely measures of symptoms of mental disorder rather than of

113   positive mental health.

114   .

115

116   **Materials and methods:**

117   <u>**Questionnaire and Instrument:**</u>

118   The questionnaire consisted of two sections. The first section recorded information related to the

119   demographics and profession of the respondents, and the second section assessed mental well-

120   being levels with WEMWBS.

121   The Warwick-Edinburgh Mental Well-being Scale (WEMWBS) was developed and extensively

122   validated in the UK general population [22]. It is a self-administered questionnaire and

123   comprises 14 positively worded items assessing eudaimonic (focused on psychological

124   functioning and a sense of meaning and purpose in life), and hedonic (focused on happiness,

125   contentment and life satisfaction) constructs of mental wellbeing. Responses are recorded on a 5

126   point Likert scale ranging from "none of the time" to "all the time". For analysis, scores ranging

127   from 14-70 are obtained by summing all of the items. There is no reverse coding. The overall

128   score is the sum of all items, with higher scores indicating greater well-being, varying from 14

129   (low well-being) to 70 (high well-being).

130   Use in the UK, and in other nations [23] reveal the scale has good psychometric properties, and

131   is feasible, reliable, and sensitive to change. Chronbach's α for the scale lies between 0.87 and

132   0.91 and the one-week test-retest reliability at r = 0.83. Validation studies have been undertaken

133   in different populations in the UK such as Scottish undergraduate and postgraduate students and

134   general population samples [22], English and Scottish teenagers [24], as well as Pakistani and

135   Chinese ethnic minorities in the UK [25]. It has also demonstrated high internal consistency,

136   good content, face validity, normal distribution and no floor and ceiling effects in previous

137   validation studies [22,24,25].

138

139   **Pilot Survey:**

140   A pilot study was conducted in which a convenience sample of 50 healthcare professionals

141   including doctors, nurses and dentists in the Combined Military Hospitals, Lahore, completed

142   and commented on the WEMWBS to assess if the original English language version WEMWBS

143   could be easily understood and completed. We received positive comments from the participants

144   that WEMBS was very easy to understand. Therefore, we did not feel the need to translate this

145   instrument to Urdu language.

146   **Sample size calculation:**

147   In general terms sample size calculation is based on variability in the sample and the size of

148   effects expected. Usually both of these are unknown before starting the study and figures are

149   estimated from previous studies or sometimes "rules of thumb" based on previous experience are

150   used. Most of the studies on validation of questionnaires in social sciences use 5-10 respondents

151   per questionnaire item for factor analyses. Factor analyses are subject to the strength of

152   communalities and factor loading and these statistical tests should instead be based on large

153   samples for reliable results [26]. Comrey and Lee recommend at least 500 cases and according to

154 their rating scale a sample size of 1000 or more is considered as excellent for factor analytic

155 studies [27]. Therefore, we aimed for a sample size of at least 1000 HCPs.

Procedure:

157 This cross-sectional survey was carried out from June, 2013 to December, 2014. The study

158 sample consisted of practicing doctors, nurses, physiotherapists, pharmacists and dentists

159 practicing either in hospital based or private settings in various cities of the province of Punjab,

160 Pakistan. Seven districts; Lahore, Faisalabad, Gujrat, Multan, Rawalpindi, Islamabad and

161 Sheikhupura were included in the survey for a study sample representative of the Punjabi

162 population. However, due to resources limitations, we could not conduct a systematic random

163 sample. Data were collected by convenience sampling approach. Sixteen medical students

164 (currently final year MBBS) approached HCPs in all available clinical settings in the Punjab

165 province. An independent sample of 50 HCPs from CMH Lahore participated in test-retest

166 assessment of WEMWBS and completed the questionnaire twice with a test-retest interval of 7

167 days.

168 Ethical approval was obtained from the Ethical Review committee of CMH Lahore Medical

169 College, Lahore Cantt, Pakistan. Written informed consent was provided by all the study

170 participants. The respondents were ensured anonymity and informed that only group level

171 findings would be reported.

Statistical analysis:

173 All data were analyzed in SPSS v. 21 (IBM Chicago, IL, USA). Frequencies and descriptive

174 statistics were calculated for demographic variables and total scores on WEMWBS. Histograms

175 and QQ-plots were visualized to assess the assumption of normality for WEMWBS scores and

176 floor and ceiling effects in the response distribution of WEMWBS. Factor analysis with principal

177 component analysis (PCA) and Quartimax rotation method was done to evaluate the construct of

178 WEMWBS. Prior to performing principal component analysis (PCA), its suitability was assessed

179 with following criteria: correlation coefficient > 0.3 for all variables, an overall Kaiser-Meyer-

180 Olkin (KMO) greater than 0.6 and a statistically significant Barlett's Test of Sphericity test (P <

181 .05). The number of components to retain were assessed with Cartell's scree plot, eigen values >

182 1, interpretability criterion, the amount of variance explained and reliability analysis.

183 Only those statements were included that had a factor loading > 0.3. Cronbach's alpha

184 coefficient was calculated to assess the internal consistency of WEMWBS in our study sample

185 and a value of 0.70 - 0.9 was considered acceptable [28]. Item-total correlations were used to

186 assess the convergent validity of the questionnaire. Correlations were calculated using Pearson's

187 product moment correlation coefficient, and values that were substantial but not excessive

188 (greater than or equal to 0.2 and less than 0.8) were sought [28]. Test-retest reliability was

189 evaluated by the intra-class correlation coefficient using a two factor mixed effects model and

190 type consistency.

191 Floor and ceiling effects were assessed by examining response patterns for each of the factors

192 derived from factor analysis. Scores were graphed as a histogram and the distribution of scores

193 inspected; the percentage of individuals with the lowest and highest possible score in each of the

194 factors was recorded, and values greater than 20% were considered as floor and ceiling effects.

195 Association between participant characteristics and WEMWBS scores were examined with

196 independent sample t-tests. Although focus groups have been used to evaluate understanding and

197 meaning to participants [25] but in previous studies on WEMBWS, its readability had not been

198 assessed. Therefore, we used the Flesch Reading Ease score and Flesch-Kincaid Grade level

199 functions to assess the readability of the questionnaire [29].

200 **Results:**

201 **Response rate:**

202 Total response rate was 90.7% (1271/1400).

203

204 **Demographics:**

205 1271 individuals responded to the questionnaire. As noted in Table 1, participants' ages ranged

206 between 20 and 68 years, with mean age (SD) 31.8 (9.4). Male participants were older, 34.1

207 (10.3) than females, 30.0 (8.1). Most of the respondents were doctors (n=840, 66%) or nurses

208 (n=218, 17.2%), female (n=720, 57%), and practicing in Lahore (n= 70%).

209 There were some differences in respondent age and gender in relation to profession: nurses were

210 almost all (97%) female, whereas among doctors and dentists there was near equal gender

211 representation. 42 of the pharmacists were male (79%), as were 64% of the physiotherapists.

212 There were no significant age differences between the professional groups, except for the

213 dentists in the sample, who were younger than the other professions - mean age 28.5 (6.6);

214 p<0.001)

215 Respondent characteristics are presented in Table 1.

216 **Descriptive Statistics and floor or ceiling effects:**

217

218 Mean (SD) and median scores on WEMBWS were 48.1 (9.4) and 48 respectively. The

219 assessment of item response frequencies from respondents showed little evidence of highly

220 skewed distributions: scores exhibited mild skewness of -.31 (.07) and kurtosis of .42 (.14).

221 Visual inspection of histogram and QQ plots did not reveal any significant deviation of response

222 distribution from normality. All response categories were used by at least one person for all the

223 scale items. Mean values for individual items ranged from 2.88 (1.1) for "I've had energy to

224 spare" to 3.74 (.99) for "I've been feeling confident" (Table 2). A histogram representing

225 distribution of mean scores of participants on WEMWBS is given in Figure 1.

226 Based on these results, it can be concluded that WEMWBS validated for Pakistani population is

227 free from any floor or ceiling effects.

228

229 As in the UK validation study (Tenant et al, 2007), mean WEMBWS scores were significantly

230 higher for men (49.16) than for women (47.30) (t = 3.486, df =1269, p =0.001) (SeeTable 1).

231 There were differences in well-being scores between the professional groups, with doctors' and

232 nurses' WEMWBS mean scores lower than those for the other professional groups. The

233 difference between WEWBS for doctors and nurses combined, compared to the other

234 professional groups combined was statistically significant: p=0.002 (mean difference= 2.22; t=-

235 3.14, df =1269). A difference in wellbeing score was evident across age group, with participants

236 aged 30 years and older noting higher WEMWBS than the younger participants: (p=0.013, mean

237 difference=1.33, t=2.48, df=1269).

238 Items 2, 10, 11 and 12 were the most positively endorsed items by both male and female

239 respondents; whereas, items 3, 4 and 5 were least endorsed by the HCPs (both males and

240 females).

241

242

Factor analysis with Principal Component Analysis (PCA):

A principal components analysis (PCA) was run on WEBWS responses. Inspection of the

correlation matrix showed that all variables had at least one correlation coefficient greater than

0.3. The overall Kaiser-Meyer-Olkin (KMO) measure was 0.83 with individual KMO measures

all greater than 0.7, classifications of 'middling' to 'meritorious' according to Kaiser (1974).

Bartlett's Test of Sphericity was statistically significant (p < .0005), indicating that the data was

suitable for factor analysis. PCA revealed two components that had eigenvalues greater than one

and which explained 42.1%% and 8.5% of the total variance, respectively. Eigen values, visual

inspection of the Catell's scree plot, interpretability criterion and Cronbach's alpha value,

indicated that one component should be retained. A single-component solution explained 42.1%

of the total variance. Total score was obtained by summing all of the items. Factor loadings of

the rotated component solution for 14-item WEMWBS based on eigen values greater than 1 are

presented in Table 3. The Scree plot is given as Figure 2.

For interest of readers, exploratory factor analysis with principal axis factoring method have

been provided as a supplementary file Table S1.

Internal Consistency and content validity:

The WEMBS consists of 14 items. The Cronbach's alpha value obtained for one factor structure

of WEMBS was found to be .89. Corrected item correlations of all the items were greater than

0.3, thus, exhibiting the same construct of all the statements of WEMWBS. Item-total statistics

for all items of WEMWBS are given in Table 4. For further assessment of internal consistency,

263 item-total score correlations, adjusted for overlap, were calculated for each item and ranged

264 between 0.46 and 0.68, that is substantial but not excessive values The item-total statistics for all

265 items of WEMWBS are given in Table 4.

266 **Test-retest reliability:**

267 The test-retest reliability evaluated by intraclass correlation coefficient was .921 with a 95 %

268 confidence interval from .861-.955, thus, indicating a very high degree of reliablilty.

269 **Readability:**

270 The values for Flesch reading ease and FK grade level score were calculated on Microsoft Word

271 2013. Flesch reading ease score for 14-item WEMWBS and FK grade level score 73.5 and 4.4

272 respectively which indicates the easy readability and understanding level of WEMWBS.

273

274 **Discussion:**

275 The present study confirms one factor construct, a high internal consistency, convergent validity,

276 high readability of WEMWBS in the Pakistani population.

277 It also indicates no floor and ceiling effects exist in response distribution of WEMWBS for

278 Pakistani population. Our study sample was relatively large and consisted of a diverse range of

279 healthcare professionals -physicians, surgeons, general practitioners, nurses, pharmacists,

280 dentists and physiotherapists - which is an important strength of this study.

281 The mean (SD) well-being score of HCP respondents in this study was 48.1 (9.4), which is lower

282 than values obtained in general population surveys in the UK. The Health Survey for England

283 identified a mean WEMWBS score for adults of 52.3 [30]; whilst the mean score found in a

284 recent population suvey for Scotland was 50.0 [31]. The median score was 48, compared to 51 in

285 the initial validation study [22] and 50 in a large-scale population sample in Northern Ireland

286 [32].

287 We also identified gender differences in well-being scores, as well as some differences between

288 professions and age groups. In this study, male HCPs scored higher on WEMWBS than females,

289 which is consistent with the findings of UK population studies [30,31]

290 Items 3, 4 and 5 were least endorsed by the HCPs in our study. According to Taggart et al

291 (2013), item 4 (I've been feeling interested in other people) was misinterpreted by Chinese and

292 Pakistani groups in the UK who took it in a sexual context [25], which might be a potential

293 reason for low positive response to this item in our study.

294   Similar to other studies conducted in the general population of the UK, our analysis has

295 confirmed the unidimensional construct of WEMWBS and a high internal consistency [22,24].

296 However, the factor structure was not as clear cut as in the original validation study [22] and

297 other analyses, with some suggestion of two factors; but the extent of cross-loading and the

298 modest additional variance explained by 2 factors/components, together with the lack of

299 explanatory or theoretical underpinning for this structure indicated that a unidimensional model

300 be retained.

301 A study conducted with Pakistani people in the UK also showed a high internal consistency, but,

302 as in the current study, the factor structure was less clear, with three factors evident, but the

303 limited variance explained by the second and third factors supporting a one-factor model. [25]

304
305 There was some correspondence between the item-total correlations identified in our study and

306 in the Taggart et al study of UK English-speaking Pakistanis. The three items with lowest item

307   total correlations in our study (item 1: 'I've been feeling optimistic about the future'; item 4:

308   'I've been feeling interested in other people'; and item 5: 'I've had energy to spare') had lowest

309   correlations in the UK-Pakistani study, though the markedly low value for item found in the UK

310   sample (0.28) was not evident in our sample of Pakistani HCPs (.0.488). In focus groups

311   conducted as part of the UK study it was indicated that a quarter of Pakistanis completing the

312   questionnaire were Pashtun speaking and born abroad and there is no translation

313   for "optimistic" in the Pashto language [25]. However, our sample consisted of Punjabi and Urdu

314   speaking healthcare professionals.

315   The histogram was slightly negatively skewed and kurtotic, however, no floor and ceiling effects

316   were observed in WEMWBS in consonance with other validation studies. WEMWBS can also

317   prove useful for assessing mental wellbeing of undergraduates due to its easy readability and

318   lucid content as demonstrated by its values for Flesch reading ease and FK grade level score of

319   4.4. This fact was also supported by favorable comments from the participants in the pilot

320   survey. Based on this data, we can speculate that this scale can be easily used in teenagers,

321   college and university students as well.

322   **Limitations:**

323   This cross-sectional study used a convenience sample of HCPs and so, unlike a systematically

324   derived probability sample, the extent to which the respondents are representative of the target

325   population is uncertain. This is likely to be of lesser importance to the psychometric evaluation

326   than the descriptive results, and is partially compensated for by the relatively large sample size

327   and high response rate; 91% of those requested to complete the measure did so, which limits

328   participation and selection bias.

329   Comparator instruments were not used alongside WEMWBS to enable criterion validity

330   evaluation.

331   Translation and back-translation to develop an Urdu language version (the national language of

332   Pakistan) was not conducted as part of this study, because our sample consisted of HCPs who

333   were all capable of reading and writing in English language. So although the WEMWBS has

334   been shown suitable for assessing mental wellbeing in a diverse group of HCPs, it cannot yet be

335   used for studies within the general population of Pakistan, where the extent of fluency in English

336   is considerably less.

337   WEMWBS assesses hedonic and eudaimonic constructs of mental wellbeing but does not have

338   any items assessing spiritual and religious wellbeing of an individual which predominate in

339   Eastern traditions and culture of Pakistan where religious tendencies have emerged as an

340   important coping mechanism [33,34], emphasized in a study conducted in ethnic minority

341   groups of Malay, Chinese and Indian Muslims and Hindus [35]. Therefore, it is suggested that

342   new generation of psychometric instruments should include items assessing these constructs as

343   well.

344   **Recommendations:**

345   This scale is particularly useful in monitoring mental wellbeing levels of HCPs and medical

346   students working in a highly demanding roles and environments. Further studies are required to

347   develop and validate an Urdu version of this scale in the general community. Alongside general

348   investigations of the range of factors that are associated with mental health and well-being, the

349   WEMWBS may also have value in evaluating efficacy of stress reduction programs such as

350   mindfulness programs, relaxation exercises, cognitive therapies, and social support and group

351   therapies that have proven useful in academic and hospital based settings [36].

352   **Conclusion:**

353   According to our knowledge, this is the first study validating a scale for assessing mental

354   wellbeing in Pakistan and thus, it is an important addition to the limited arsenal of validated

355   psychometric instruments that exist for the Pakistani population. The WEMWBS has

356   demonstrated excellent psychometric properties in Pakistani HCPs and it appears a valid and

357   reliable tool for use among English-speaking Pakistani people.

358   **Acknowledgement:**

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360   Liverpool, United Kingdom, for his valuable suggestions to improve this manuscript.

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Table 1(on next page)

Demographic characteristics of HCPs participating in the survey (n=1271)

1 Table 1: Demographic characteristics of HCPs participating in the survey (n=1271)

Variable		Frequency (n)	WEMWBS Mean (SD)
Gender	Male	551 (43.4%)	49.16 (9.16)
	Female	720 (56.6%)	47.30 (9.59)
Healthcare Profession	Doctor	840 (66.1%)	47.74 (9.57)
	Nurse	218 (17.2%)	47.74 (9.45)
	Pharmacist	53 (4.2%)	50.28 (8.35)
	Physiotherapist	25 (2%)	49.44 (6.90)
	Dentist	135 (10.6%)	49.93 (9.26)
City	Lahore	893 (70.3%)	
	Multan	86 (6.8%)	
	Sheikhupura	54 (4.2%)	
	Gujrat	58 (4.6%)	
	Rawalpindi	101 (7.9%)	
	Faisalabad	54 (4.2%)	
	Islamabad	25 (2%)	
Age	>= 30	542 (42.6%)	48.87 (9.11)
	< 30	729 (57.4%)	47.54 (9.65)

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Table 2 (on next page)

Item level statistics for WEMWBS for Pakistani HCPs (n = 1271)

2   **Table 2. Item level statistics for WEMWBS for Pakistani HCPs (n = 1271)**

Statement	Mean	Std. Deviation
I've been feeling optimistic about the future	3.36	1.109
I've been feeling useful	3.74	.991
I've been feeling relaxed	3.03	1.085
I've been feeling interested in other people	2.97	1.140
I've had energy to spare	2.88	1.113
I've been dealing with problems well	3.53	.959
I've been thinking clearly	3.59	1.034
I've been feeling good about myself	3.58	1.052
I've been feeling close to other people	3.33	1.053
I've been feeling confident	3.74	.999
I've been able to make up my own mind about things	3.72	.992
I've been feeling loved	3.64	1.038
I've been interested in new things	3.58	1.111
I've been feeling cheerful	3.42	1.022

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Table 3 (on next page)

Factor loadings for 14 item WEMWBS in Pakistani health personnel (n = 1271)

Table 3: Factor loadings for 14 item WEMWBS in Pakistani health personnel (n = 1271)

Statements	Factor Loading	
	I	II
I've been feeling confident (Item 10)	.789	
I've been feeling good about myself (Item 8)	.776	
I've been thinking clearly (Item 7)	.744	
I've been able to make up my own mind about things (Item 11)	.722	
I've been dealing with problems well (Item 6)	.703	
I've been feeling cheerful (Item 14)	.686	
I've been feeling close to other people (Item 9)	.670	
I've been feeling useful (Item 2)	.637	
I've been feeling loved (Item 12)	.625	
I've been interested in new things (Item 13)	.578	
I've been feeling optimistic about the future (Item 1)	.541	
I've been feeling interested in other people (Item 4)	.390	.663
I've had energy to spare (Item 5)	.378	.646
I've been feeling relaxed (Item 3)	.508	.528

Extraction Method: Principal Component Analysis.

 Rotation Method: Quartimax with Kaiser Normalization.

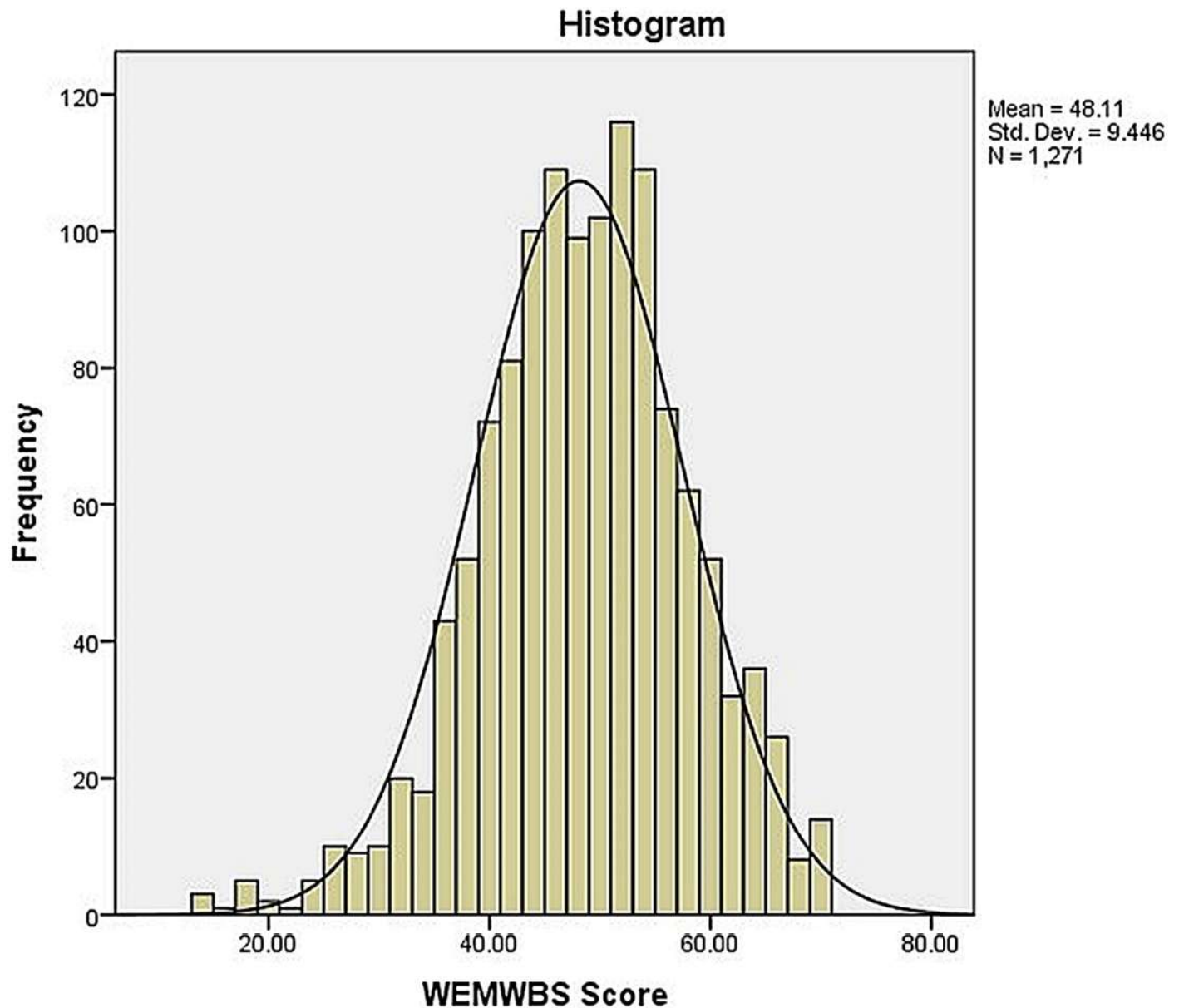a. Rotation converged in 3 iterations.

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Table 4 (on next page)

Item total statistics for 14-item WEMWBS (n = 1271)

Table 4: Item total statistics for 14-item WEMWBS (n = 1271)

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
I've been feeling optimistic about the future	44.75	78.422	.488	.293	.887
I've been feeling useful	44.37	78.627	.548	.350	.884
I've been feeling relaxed	45.08	77.650	.544	.355	.884
I've been feeling interested in other people	45.13	78.590	.462	.292	.888
I've had energy to spare	45.23	79.177	.445	.289	.889
I've been dealing with problems well	44.58	77.894	.616	.447	.881
I've been thinking clearly	44.52	76.722	.631	.490	.880
I've been feeling good about myself	44.53	75.597	.684	.525	.878
I've been feeling close to other people	44.78	76.788	.614	.424	.881
I've been feeling confident	44.37	76.938	.644	.518	.880
I've been able to make up my own mind about things	44.39	77.959	.587	.421	.882
I've been feeling loved	44.47	78.118	.547	.348	.884
I've been interested in new things	44.52	77.251	.550	.352	.884
I've been feeling cheerful	44.69	76.463	.656	.492	.879

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Frequency distribution of total scores of Pakistani HCPs on WEMWBS (n = 1271)

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Scree plot for 14-item WEMWBS