Development and validation of a psychometric scale to assess attitude towards safe abortions in Pakistan

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Abstract

Despite severe health and economic consequences that women face because of the negative attitude of healthcare providers towards safe abortion and post-abortion care (SA/PAC), no psychometric tool has yet been validated for assessing the attitude towards SA/PAC. Only a handful of studies have attempted to assess healthcare providers' attitude towards safe abortions in Pakistan. Therefore, this study aimed to develop and validate a psychometric scale to assess attitude towards safe abortions in Pakistan. The study collected data from 106 workers of an NGO that provides SA/PAC through an online and anonymous survey using the organisation's network. The study used factor analytic techniques and structural equation modelling to validate the factor structure and a final hierarchical model. A final scale of seven items relating to attitude towards elective abortions and moral attitude towards safe abortions was validated. The scales were highly reliable with both factors having reliability indicators greater than 0.7. The scale can be easily implemented to assess providers' attitude towards safe abortions. This will allow programmers to screen healthcare providers with a negative attitude, and evaluate the efficacy of their Value

29 Clarification and Attitude Transformation (VCAT) programmes that are aimed at

30 transforming providers' attitude towards safe abortions.

31 **MeSH Words:** Structural equation modelling, factor analysis, post-abortion care,

32 scale development, elective abortions.

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34 **Introduction**

35 With a high fertility rate of 3.6 and only 25% of the population using modern

36 contraception, Pakistan is marred with one of the highest rates of unintended

37 pregnancies in the world at 93 per 1,000 women aged 15-49.[1-3] This results in 4.4

38 million annual unintended pregnancies, of which 54% are resolved through,

39 predominantly, unsafe abortions.[2] Majority of these abortions are clandestine and

40 are performed under poor safety conditions, thereby posing a serious risk to the

41 health and lives of the women.[4] This can be seen in the high rate (14 per 1,000)

42 of women who are treated for post-abortion complications due to poor conditions

43 and unsafe procedures.[2] The Pakistan Penal Code 1948 states that an abortion can

44 be legally sought and performed to save the mother's life or to provide "necessary

45 treatment".[4] However, the ambiguity in the statement leaves a lot of room for

46 varying, and mostly restrictive, interpretation by both healthcare providers

47 (NGOs, and public and private providers) and the women concerned.[4, 5] Women

48 feel reluctant to approach qualified professionals to procure a safe abortion due

49 to lack of knowledge of the practice, or the possibility of committing a criminal

50 offence, while medical professionals may be averse to the practice due to their

51 beliefs and the fear of being labelled an "abortionists".[5]

52 This refusal to provide a medical service that women are entitled to stems from

53 an extremely negative attitude of service providers towards safe abortions and

54 incorrect knowledge about the legality of abortions under the Penal code as well

55 as Islamic jurisprudence.[5] No psychometric tool has yet been validated for

56 assessing providers' attitude, and only a handful of studies have attempted to

57 assess the attitude of healthcare providers towards safe abortions in Pakistan.[2, 4,]

58 [5] Accurate assessment of attitude is critical for screening providers with a
59 negative attitude and developing Values Clarification and Attitude
60 Transformation (VCAT) programmes for transforming their attitudes. Healthcare
61 providers' attitude towards safe abortion and post-abortion care (SA/PAC) is
62 critical for creating a cordial environment for women to avail services.

63

64 **Methods and Results**

65 Since there is no precedent for a psychometric scale to measure attitude towards
66 SA/PAC in Pakistan, we adapted and refined an existing scale.[6] Twenty-six
67 culturally-congruent items, that focussed on multiple dimensions around attitude
68 towards SA/PAC,[7, 8] were developed on a seven-point Likert scale. Data was
69 collected through a cross-sectional survey of NGO workers from June to July
70 2017. Respondents were primarily based in the Karachi office of an NGO that
71 provides SA/PAC services in Pakistan. A-priori sample size calculation for
72 structural equation models determined the minimum sample to be 113 with an
73 anticipated effect size of 0.3, desired statistical power of 0.8, five latent variables,
74 and 26 observed variables.[9] Data were collected through an online survey
75 disseminated through the NGO's email network, and, with a response rate of
76 93%, a sample of 106 was achieved. Data were also collected on
77 sociodemographic characteristics, and legal and contextual knowledge of
78 SA/PAC in Pakistan. Statistical analyses were performed using LISREL Version
79 8.8 and Stata MP Version 13.1. DeVellis' scale development guidelines were
80 utilised for data analysis.[10]

81 Exploratory factor analysis (EFA) was used to identify a parsimonious set of
82 factors to assess attitude towards SA/PAC. Since scale items were ordinal,
83 unweighted least squares estimation with polychoric correlations was used. The
84 Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy determined the
85 sample size to be average for factor analysis by providing a value of 0.75.[11] EFA
86 revealed the two-factor solution as the optimal solution with one factor pertaining

to Attitude towards Elective Abortions (EA) and the other to Moral Attitude (MA) towards SA/PAC. Seven items with loadings greater than 0.5 and conceptual underpinnings were retained in the final scales (Table 02).[12] Factors' reliability and validity was established through Average Variance Extracted (AVE), Coefficient H, and Ordinal Alpha.[13, 14] AVE for both factors exceeded 0.5 while Ordinal Alpha and Coefficient H for both factors exceeded 0.75. (Table 02) A subjects-to-variables (STV) ratio approach was used to provide an estimate of whether this sample size would suffice. An STV ratio of ≥ 20 is recommended.[10] The final scale consisted of seven items and thus provided with an STV ratio of 15.

Descriptive statistics (Table 01) were used to review the sample's characteristics. There were 73 (69%) men and 32 (30%) women in the sample; mean age of the sample was 33.9±9.4 years with 82 (77%) respondents holding graduate degrees, and 81 (76%) respondents were married. Mean number of years of professional experience was 12.3±6.4 years, while the respondents had been working for the NGO for an average of 5.5±4.3 years. Furthermore, 48 (36%) respondents felt their religious beliefs influenced their view towards SA/PAC and 33 (31%) respondents thought that it is not legal for women to access SA services in Pakistan. Moreover, only 23 (22%) respondents were able to correctly answer the number of pregnancies terminated through abortions in Pakistan which was reflective of low contextual knowledge.

Structural Equation Modelling (SEM) was undertaken to validate the factor structure and explore relationships between the two factors.[15] Satorra-Bentler (SB) χ^2, Comparative Fit Index (CFI), Standardised Root Mean Square Residual (SRMR), Akaike Information Criterion (AIC), and Root Mean Square Error of Approximation (RMSEA) were used to test the fit of the models.[16] A measurement model of seven items with two factors was run through SEM using Diagonally Weighted Least Squares (DWLS) estimation fitted to polychoric

115 correlations and asymptotic covariances.[17] The model yielded a good fit [SB χ^2

116 (13, 106) = 17.47 (p=0.18), CFI = 0.993, SRMR = 0.058, AIC = 47.47, RMSEA

117 = 0.057 (0.000; 0.120)]. (Table 03) Both factors were highly correlated (r= 0.83,

118 p<0.001) indicating the presence of a hierarchical factor of attitude towards SA.

119 A hierarchical model (Figure 01) was tested, which yielded a marginally better

120 fit [SB χ^2 (12, 106) = 14.86 (p=0.25), CFI = 0.996, SRMR = 0.058, AIC = 46.86,

121 RMSEA = 0.048 (0.000; 0.116)]. Since the hierarchical model fit better, it was

122 accepted as the final model. The hierarchical factor explained 91% of the variance

123 in EA and 76% of the variance in MA. (Figure)

124 Overall attitude towards SA/PAC was negatively correlated with the belief that

125 attitude is influenced by religion (r = -0.45, p<0.001), and positively correlated

126 with correct legal knowledge (r = 0.47, p<0.001) and correct contextual

127 knowledge (r = 0.26, p<0.001).

128

Conclusion

130 This scale was developed through rigorous latent variable methodology and has

131 reduced measurement bias. Furthermore, confirmation of a hierarchical factor

132 indicates that the scores of the scales can be simply summed up to create a

133 composite variable for attitude towards SA/PAC. This scale can be implemented

134 routinely to recruit providers and implementers with a pre-existing positive

135 attitude towards SA/PAC, and screen providers with a negative or neutral attitude

136 towards SA/PAC. Moreover, Value Clarification and Attitude Transformation

137 (VCAT) for SA/PAC programmes can be developed and tailored in accordance

138 with the dilemma of the providers (i.e. dilemma with morality of SA/PAC versus

139 dilemma with the element of choice). The study further highlights the importance

140 of legal and contextual knowledge as it has a direct impact on individuals'

141 attitude.

142 The study had a small sample taken from one NGO in Pakistan; however, all the

143 respondents were implementers or had significant exposure to the operational

144 environment of providing SA/PAC services. The questionnaire was prepared in
145 English,[1] and would require a subsequent validation for implementation in Urdu
146 with service providers. Future studies should test this scale with different
147 subpopulations within the health sector and test its application with the
148 development of VCAT programmes.

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154

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198 **Table 01: Sociodemographic Characteristics**

Socio-demographic Characteristics	Mean±SD or n (Percentage)
	(n=106)
Age (years)	33.92 ± 9.4
Gender	
Male	73 (68.9%)
Female	32 (30.2%)
Prefer not to say	01 (0.9%)
Highest level of education attained	
Below Graduate	21 (19.8%)
Graduate	82 (77.4%)
Doctoral	03 (2.8%)
Marital Status	
Single	19 (17.9%)
In a relationship	03 (2.8%)
Engaged	01 (0.9%)
Married	81 (76.4%)
Widowed	02 (1.9%)
Years of Professional Experience	12.27 ± 6.4
Years of Experience at NGO	05.51 ± 4.3
Do you feel that your religious beliefs influence your views towards abortions?	
Yes	48 (35.8%)
Do you think it is legal for women to access safe abortion services within the first sixteen weeks in Pakistan?	
Yes	73 (69.8%)
In your opinion, how many pregnancies are terminated through abortions in Pakistan?	
Around 2.25 million	23 (21.7%)

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201 **Table 02: Reliability and Validity of the Final Validated Constructs**

Factor	Items	Factor Loadings	Average Variance Extracted	Coefficient H	Ordinal Alpha
Attitude towards Elective Abortions	If a pregnant woman knows she cannot afford to feed that child then an abortion is a moral decision.	0.75	0.57	0.79	0.79
	Safe abortions within the first 16 weeks should be available as an alternative for unmarried, pregnant teenagers.	0.78			
	A pregnant woman not wanting to have a child should be offered the option of a safe abortion in the first 16 weeks	0.73			
Moral Attitude towards SA/PAC	Abortion should be considered killing a person.	0.82	0.64	0.92	0.88
	People should consider those having an abortion immoral.	0.87			
	No one has the right to decide the life or death of a foetus.	0.78			
	An abortion is immoral no matter what the circumstances are.	0.73			

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Final Hierarchical Model for Attitude towards Abortions
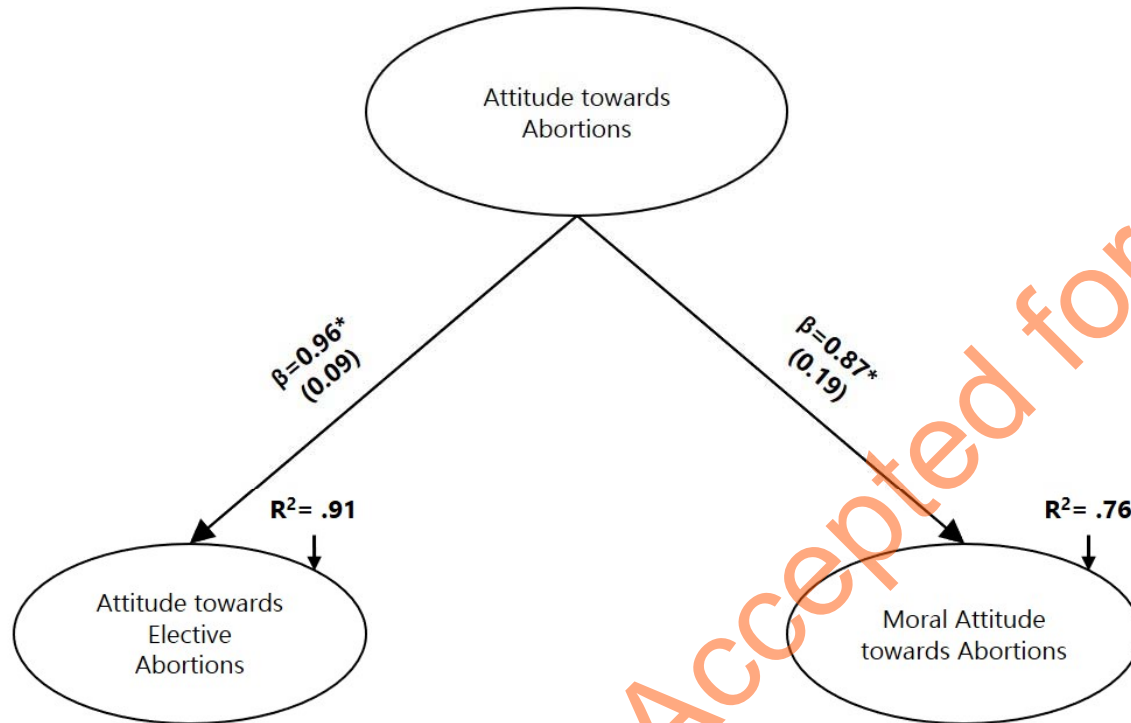
Structural Equation Modeling Equation

The hierarchical factor explains 91% of the variance in Attitude towards Elective Abortions and 76% of the variance in Moral Attitude towards Abortions.

Model Goodness of Fit Statistics

SB χ^2 (12, 106) = 14.86 (p=0.25), CFI = 0.996, SRMR = 0.058, AIC = 46.86, RMSEA = 0.048 (0.000; 0.116)

205

206   **Figure 1**