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Dimension reduction (factor analysis) to derive meaningful components from the variables of the questionnaires to assess the perceptions and expectations of doctors and patients on pharmacy service

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Background: Since pharmacist is the professional link between the doctor and patient, it is important to know perceptions of both these stake holders. Factor analysis can be used to understand meaningful components of a questionnaire.

Objective: To derive meaningful components for questionnaires to analyse perceptions and expectations of doctors and patients on pharmacy service using factor analysis.

Methods & Materials: Two questionnaires were developed in-house referring past studies, content validated by a group of experts, and face validated through a pilot study. They were translated to Sinhalese and Tamil and back translated to English. The questionnaire to assess doctors’ perceptions had 20 variables and sample size was 84. Patients’ questionnaire had 33 variables and sample size was 380. Principal component analysis with Varimax rotation was used for factor analysis. For a suitable data set, Kaiser-Meyer-Olkin (KMO) value should be around 0.5 and Bartlett's test of sphericity should be significant ($p < 0.05$). Components with Eigen value more than one (> 1) and factor loadings with a value of 0.5 or more were considered suitable. A component was considered to be meaningful if a minimum of two or three variables were loaded. Each component was labelled accordingly.

Results: Factor analysis of questionnaires to assess doctors’ perceptions and patient perceptions produced KMO values of 0.602 and 0.629 respectively. Bartlett’s test of sphericity was significant ($p < 0.001$) for both. Factor analysis resulted in four components for doctors’ analysis and ten components for patients’ analysis. Eighteen variables and 30 variables loaded to a component with a loading value greater than 0.5 in doctor’s and patient’s analysis respectively. Minimum loading value was 0.527 for doctors’ perceptions, and 0.546 for patients’ perceptions.

Conclusion: Factor analysis divided variables of questionnaires into components to meaningfully analyse perceptions and expectations of doctors and patients on pharmacy services.

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