

Nurse Professionalism Scale: Development and Psychometric Evaluation

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Research

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Abstract

Background

Professionalism is a key trait connecting the nurse and patient, and Code of Professional Conduct, a professional legitimacy in considering nursing as a profession and an essential tool that facilitates nurse practice. This study aims to develop Nurse Professionalism Scale using the Code of Professional Conduct for Nurses in India and test the psychometric properties.

Methods

A sample of 1054 registered nurses working in various work areas at different levels and sectors of health care was selected using stratified random sampling. Data were collected through self-report from registered nurses and multi-source feedback from their supervisors and colleagues. A total of 830 self-reported data sets, 687 supervisor and 747 colleague responses were received. Following data cleaning, complete sets of 644 self-supervisor-colleague responses were used for analysis using exploratory factor analysis in SPSS version 25 and confirmatory factor analysis in AMOS 22.

Results

Reliability estimate for internal consistency of the 38 item scale was .910 (self report), .951 (supervisor feedback) and .952 (colleague feedback). Exploratory factor analysis using self-reports extracted five factors with 22 items at Eigen values > 1 . Items with communalities $\geq .4$ and factor loadings $\geq .5$ were retained. Five factors explained total cumulative variance extracted at 51 percent and KMO value of .893 indicated sample adequacy. Bartlett Test of Sphericity was significant ($\chi^2 = 3318$, $df = 231$, $p < .000$). The factors are labelled with reference to the original code and higher factor loading. CFA using supervisors feedback (CMIN/DF = 2.938; GFI = .926, TLI = .927; CFI = .939 and RMSEA = .055) and colleagues feedback (CMIN/DF = 3.165; GFI = .921, TLI = .908; CFI = .923 and RMSEA = .058) yielded acceptable model fit indices confirming the psychometric properties.

Conclusions

The scale can be used as a tool to evaluate professionalism among nurses across different settings. Multisource feedback from stakeholders can also be considered as an effective method of gathering data on this construct.

Background

Across every health system, health workers determine the provision of the nature and quality of services. Surprisingly, most health systems on a global stage face nursing shortage, which further differs across

states and rural-urban settings.¹ India is still a developing country.² Nurses structure the major segment of country's health human resource and nursing services amount to an integral fraction of preventive and curative phases which is evident through the provision of care from tertiary level to every doorstep even beyond the availability of doctors. However, despite the central role, nurses remain unrecognized in the health care delivery system.³

The national estimates indicate shortage of nurses which is further compounded by the international migration of this valuable resource due to varied professional, social and economic reasons. This adds to the non-availability of skilled, standard and quality health services particularly to the under privileged sections in the country.¹ Inadequate workforce and deficient quality care further escalates the morbidity and mortality rates in the country further resulting in overburdened workforce. Thus the vicious cycle continues and hampers the progress of nursing profession in the country.

Nurses are perceived as a compliment 'package' or 'quick' trained caregivers filling up the health provider shortage. However, they are seldom considered while contributing to ideas and views related to client needs or interventions or any form of health care modalities. Also, scenario does not synchronize with the fact that nurses are 'round the clock', well-educated health care providers and constitute the largest group of professionals in the health care delivery system. Hence, amidst tremendous development, professionalism among nurses is essential to promote a transition in the profession.⁴

Adams et al.,⁵ stated that nursing professionalism necessitates nurses to demonstrate definite behavior illustrating beliefs of the profession in terms of knowledge, attitudes and skills signifying professional identity and commitment to the profession. These features are consistent with the characteristics sketched in the "Registered Nurses Association of Ontario-Best Practice Guideline" (RNAO-BPG), 'Professionalism in Nursing'⁶ and "Miller's model" the 'Wheel of Professionalism in Nursing'.⁷

Several researchers have developed instruments to explore and or evaluate professionalism among nurses. Miller's Model or the 'Wheel of Professionalism in Nursing' was an extension of Hall and Friedson's works. Miller also used "The Social Policy Statement, Code for Nurses with Interpretative Statements and recommendations and policies from the American Nurses Association" as a basis for the behaviors represented in the Wheel which served as a guide for every nurse in monitoring professional behavior. Subsequently, Miller et al.,⁷ developed an evaluative "Behavioral Inventory Form for Professionalism in Nursing" based on the Model which is widely used to evaluate professionalism among nurses.⁸⁻¹¹

Several other researchers explored professionalism among nurses using RNAO-BPG⁶ questionnaire, an adaptation of Registered Nurses Association, Ontario-Best Practice Guidelines,^{12,13} and "Hall's Professionalism Inventory" scale.¹⁴ "The Professionalism and Environmental Factors in the Workplace Questionnaire, was developed based on literature, code of ethics and jurisdictional practice standards.¹⁵

Relevant literature review on the construct professionalism across various professions revealed that most researchers have described, adopted, adapted or developed instruments based on the professional code of conduct and ethics. Physician Charter on Medical Professionalism is a product of the collaboration between American Board of Internal Medicine Foundation, American College of Physicians Foundation, and European Federation of Internal Medicine. This document highlights the principles and responsibilities fundamental to professionalism in medicine.¹⁶⁻¹⁸ Some others have used standards from the “Accreditation Council on Graduate Medical Education”.^{19,20} The “Code of Ethics for Pharmacists and the American Association of Colleges of Pharmacy” and “The American Council on Pharmaceutical Education Accreditation Standards” describing the attitudinal and behavioural components have been considered in pharmaceutical care.²¹ “The College of Medical Laboratory Technologists of Ontario’s Code of Ethics and Standards of practice” serve as the foundation of their professionalism.²² Pollard²³ explored ethical performance contributing to authority, control and social responsibility as the hallmark of professionalism among news workers. American Bar association and the judicial statements on professionalism serve as the basis for evaluating professionalism among lawyers.²⁴

This study aims to develop and evaluate the psychometric properties of Nurse Professionalism Scale (NPS) which is based on the Code of Professional Conduct for Nurses in India, framed by the national regulatory body, Indian Nursing Council. The Code serves the interests and needs of the profession and illustrates individual nurse’s professional responsibility and accountability, nursing practice, communication and interpersonal relationships, valuing human being, management, professional advancement. It reminds the nurses about the attempts mandatory towards upholding the profession while providing direct care, teaching students, conducting research, supervision and management. Stakeholders and administrators also contribute to the sustenance and improvement of professionalism among nurses.⁴ Multi-source feedback is a method of data collection through supervisors, peers and other staff that helps develop a broad gauge of practice patterns. It aims to raise self-awareness regarding performance, seek encouragement and improvement through feedback.²⁵ It can highlight concerns and fuel awareness regarding professionalism among nurses amidst the shortage and the overburdened schedule in developing countries.

Methods

Development of the Nurse Professionalism Scale (NPS)

The process followed in the development of the scale is based on the steps enlisted by Boateng et al.,²⁶ and Carpenter.²⁷

Phase 1

I.1. Item Generation

Following review of literature, the national Code of Professional Conduct for Nurses in India” consisting of 38 items and six dimensions, was identified as a comprehensive measure to identify professionalism among nurses. This crucial document is readily available for nurses as a guide in making ethical decisions; hence no formal permission is obtained for using the code. The code was reviewed by four nurse educators, two clinical nurses and three management faculty for readability, comprehensiveness and appropriateness of items. Based on the discussion and feedback, items were re-worded without changing the meaning. Since it was the national professional code, no items were deleted at this stage. It was decided to use the code as a Nurse Professionalism Scale on six point likert scale with 0 as Not Applicable (NA) and from 1 = never to 5 = always. Two versions of the instrument were created; self-assessment for clinical nurses and multi-source feedback for supervisors and colleagues to evaluate those nurses’ behaviour.

I.2. Content Validation

‘A measure has content validity when its items accurately represent the thing being measured’.¹⁵ The tool was sent for content validation to the experts; 16 in nursing and 7 in health care management, who were requested to validate the tools on relevance and clarity with a 4-point rating scale. Fifteen experts provided valid response, comments and suggestions and 6 experts gave suggestions and comments only. Score of one and two was considered as zero and score of three and four were considered as one during calculation of item as well as scale content validity. However, some experts suggested reframing a few items. Changes were incorporated and the tool was resent to 15 experts from among the initial experts. Five nursing and three health care management experts validated the tool and provided their valuable comments and suggestions. The calculated I-CVI and the S-CVI were above 0.9.

Ethical considerations

Approval was obtained from the ethical review committee. Written permission was obtained from the authorities of the private and autonomous settings. Informed consent was obtained from the respondents after explaining the purpose, benefits, risks and anonymity and confidentiality assurance.

Phase II: Scale Development

II. 1. Pre-testing

“Pre-testing helps to ensure that the items are meaningful to the target population before the survey is actually administered”.²⁶ The tool was administered on conveniently selected 55 clinical nurses working in primary health centres. The participants did not indicate any difficulty in providing responses on the tool.

II. 2. Survey Administration and Sample Size

Registered nurses working in the medicine, surgery, obstetrics and gynaecology, paediatrics, emergency and intensive care unit, psychiatry and community at tertiary, secondary and primary levels in the private, government and the autonomous sector of health care were selected using stratified random sampling.

The inclusion criteria were to include settings which gave written permission and had more than five registered nurses. Data were collected through self report from clinical nurses and as multi-source feedback from their supervisors and colleagues. The tool was administered to 1054 registered nurses personally. To avoid researcher presence bias or compulsion for favourable responses and considering their demanding work schedule, the participants were given one week period to complete their responses. While collecting the tool back it was noticed that many participants had not completed their responses owing to their hectic work schedule. To avoid high attrition the participants were requested to complete the response within another week.

A total of 830 self reported data sets, 687 supervisor and 747 colleague responses sheets were received. However, following data entry, the data were checked for missing and incomplete responses and outliers. Complete set of self-supervisor-colleague responses contained in 644 data sheets (Table 1) received from respondents working across different work areas, different levels and different sectors was used for overall analysis. Reliability estimate for internal consistency of the 38 item NPS using Cronbach α was .910 (self report), .951 (supervisor feedback) and .952 (colleague feedback).

Table 1
Sample demographics.

I	Area of work	Frequency	Percentage
1	Medicine	130	20.2
2	Surgery	136	21.1
3	Obstetrics and Gynaecology	42	6.5
4	Paediatrics	88	13.7
5	Emergency and Intensive Care Unit	144	22.4
6	Psychiatry	28	4.3
7	Community	76	11.8
	Total	644	100
II	Levels of Health Care		
1	Tertiary	400	62.1
2	Secondary	195	30.3
3	Primary	49	7.6
	Total	644	100
III	Sector of Health Care		
1	Private	151	23.4
2	Government	479	74.4
3	Autonomous	14	2.2
	Total	644	100

Results

II.3. Extraction of Factors

Factor analysis is used to demonstrate the basic goal of obtaining groups of highly inter-correlated variables into distinct factors.²⁸ Exploratory Factor Analysis (EFA) evaluates the construct validity in the initial phase of an instrument development and after an initial set of items have been identified, it is used to inspect the item set underlying dimensionality and the extracted factors explain the maximum variance in the scale. Thus, a large set of items can be grouped into meaningful subsets which measure different factors.²⁹

EFA was performed with the aim to reduce and group items together so that each factor would represent a consistent content area. In order to exclude the measurement errors in this study, Maximum Likelihood and Promax rotation was used. The aim was to retain factors extracted with Eigen values greater than 1 and items with communalities above .4 which confirms the common variance shared by each measured item with other items of the construct on which it loads. The Scree test identifies the optimal number of factors which can be extracted in a graphical presentation. The scree test of the data set also indicated five factors above one (Fig. 1).

Factor loadings of $\pm .5$ and greater are measured as practically significant.²⁸ The factor loadings obtained are between .84 and .5 (Table 2). Four factors are explained by 4–6 items. A two item factor can also be retained and considered acceptable if the items are strongly correlated ($r > .70$; or $> .60$) and reasonably uncorrelated with other variable.^{29,30} Hence the factor with two items ($r = .62$) was also retained in this study. In social sciences a factor solution accounting for the total variance extracted up to 60 percent,²⁸ or at least 50 percent is acceptable.³¹ Five factors measured by 22 items explained the total cumulative variance extracted at 51 percent. Kaiser-Meyer-Oklin measure of sample adequacy value of .893 indicated sample adequacy. Bartlett Test of Sphericity was significant ($\chi^2 = 3318$, $df = 231$, $p < .000$) and indicated sufficiently large correlations among items.

Table 2
Item loadings in Exploratory Factor Analysis

Factors	Items		Loadings
I	Man9	Works with patients to identify their needs and sensitizes policy makers and funding agencies for resource allocation.	.771
	PA2	Contributes to the development of nursing practice (by conducting research or trying out new methods of care).	.740
	PA5	Contributes to core of professional knowledge by conducting and participating in research.	.734
	MAN8	Participates in policy decisions related to patient care services.	.687
II	MAN 4	Facilitates conducive work culture in order to achieve patient care objectives.	.853
	VHB 2	Considers relevant facts while taking decisions in the best interest of patients.	.671
	PA1	Takes responsibility for updating my/her/his own knowledge and competencies.	.585
	PRA 8	Provides adequate information to patients and significant others that allows them to make informed choices.	.570
	PA 4	Ensures the protection of the human rights while pursuing the advancement of knowledge (while conducting research or trying out new methods of care).	.560
	MAN 3	Uses judgment in relation to individual competence while delegating responsibility to colleagues, patients, relatives.	.524
III	NP 6	Ensures safe practice of care for self and patients.	.708
	PRA 2	Maintains standards of conduct/practice which adds to the respect/status of the profession.	.641
	CIR 1	Establishes and maintain/maintains effective interpersonal relationships with patients and their significant others.	.613
	PRA 7	Takes responsibility for continuous improvement of current nursing care practices.	.580
	NP 2	Treats patients and their significant others with human dignity while providing holistic nursing care.	.561
	PA 3	Participates in determining and implementing quality care.	.517
IV	PRA 5	Accepts accountability for her/his own decisions and actions.	.709
	MAN 1	Ensures appropriate allocation and utilization of available resources.	.595
	PRA3	Carries out nursing responsibilities within the framework of professional boundaries.	.543

Factors	Items		Loadings
	PRA1	Has a sense of self-worth as a nurse professional and nurtures it.	.516
V	VHB 3	Encourages and supports patients in their right to speak for themselves on issues affecting their health and welfare.	.781
	VHB 1	Takes appropriate action to protect patients from harmful and unethical practice.	.742

Labelling the factors or the dimensions

Variables with higher loadings on a particular factor are considered as more significant and more representative of the factor. Hence the factor is labelled with reference to the variable with higher factor loading.²⁸ In this study, factors are labelled considering higher factor loadings. In Factor I, the variable PA2 with highest loading and PA5 are originally from the dimension "Professional advancement". Items MAN9 and MAN8 reflect development of the profession through working with other stake holders and participating in policy decisions. Hence, the factor is labelled as "Professional Advancement /Development". In Factor II, two variables with higher factor loadings (MAN4 and MAN3) are originally from the dimension "Management", the variable VHB2 reflects decision making which can be considered as a management function. Hence the second factor is labelled as "Management". Factor III, is majorly a reflection of nursing practice besides having the variable NP6 with the highest loading on that factor, which originally is from the dimension "Nursing Practice". Factor IV is explained by three variables; PRA5, PRA3 and PRA1, hence the label "Professional Responsibility and Accountability", is retained as from the original code. Factor V is explained by two variables from the original dimension "Valuing Human Being", as seen in Table 3.

Table 3
Label of factors in the Nurse Professionalism Scale (NPS)

I	Professional Advancement/Development
Man9	Works with patients to identify their needs and sensitizes policy makers and funding agencies for resource allocation.
PA2	Contributes to the development of nursing practice (by conducting research or trying out new methods of care).
PA5	Contributes to core of professional knowledge by conducting and participating in research.
Man8	Participates in policy decisions related to patient care services.
II	Management
Man4	Facilitates conducive work culture in order to achieve patient care objectives.
VHB2	Considers relevant facts while taking decisions in the best interest of patients.
PA1	Takes responsibility for updating my/her/his own knowledge and competencies.
PRA8	Provides adequate information to patients and significant others that allows them to make informed choices.
PA4	Ensures the protection of the human rights while pursuing the advancement of knowledge (while conducting research or trying out new methods of care).
Man3	Uses judgment in relation to individual competence while delegating responsibility to colleagues, patients, relatives.
III	Nursing Practice
NP6	Ensures safe practice of care for self and patients.
PRA2	Maintains standards of conduct/practice which adds to the respect/status of the profession.
CIR1	Establishes and maintain/maintains effective interpersonal relationships with patients and their significant others.
PRA7	Takes responsibility for continuous improvement of current nursing care practices.
NP2	Treats patients and their significant others with human dignity while providing holistic nursing care.
PA3	Participates in determining and implementing quality care.
IV	Professional Responsibility and Accountability
PRA5	Accepts accountability for her/his own decisions and actions.
Man1	Ensures appropriate allocation and utilization of available resources.
PRA3	Carries out nursing responsibilities within the framework of professional boundaries.
PRA1	Has a sense of self-worth as a nurse professional and nurtures it.

I	Professional Advancement/Development
V	Valuing Human Being .613 .549
VHB3	Encourages and supports patients in their right to speak for themselves on issues affecting their health and welfare.
VHB1	Takes appropriate action to protect patients from harmful and unethical practice.

Phase III. Scale Evaluation

III. 1. Tests of Dimensionality through Confirmatory Factor Analysis

“Tests of dimensionality determine whether the measurement of items, their factors, and functions are the same across two independent samples or within the same sample at different time points. Such tests can be conducted using independent confirmatory factor analysis (CFA)”.²⁶ It is a form of psychometric evaluation that permits for the systematic comparison of alternative a-priori factor structure on the basis of systematic model fit evaluation procedures and assess the relationship between latent constructs.²⁷ Obtaining a good model fit to the data in a different sample supports the factor structure reliability and validity of the scale.²⁹ CFA using AMOS version 22 was conducted using the supervisor and colleague feedback data separately. Confirmation of factors is based on the fit indices which range from 0 to 1, and values closer to 1 suggest good model fit.³⁰ SEM researchers advocate .95 as a more desirable level. “Root mean square error of approximation (RMSEA) at or less than .05” indicates secure model fit.²⁹ In this study the model fit indices obtained (CMIN/DF = 2.938; GFI = .926, TLI = .927; CFI = .939 and RMSEA = .055) for supervisor data and (CMIN/DF = 3.165; GFI = .921, TLI = .908; CFI = .923 and RMSEA = .058) using colleague data confirmed the factors in the Nurse Professionalism Scale.

Discussion

This study aimed the development of “Nurse Professionalism Scale” using the Code of Professional Conduct for Nurses in India, Indian Nursing Council. EFA using self reported data resulted in extraction of five factors. Supervisor and colleague feedback regarding the professional behaviours of registered nurses confirmed the items and factors. Solomon et al.,¹³ adapted behaviours from RNAO guideline on a 5 point likert scale which consisted of 34-item and 8 dimensions; Knowledge, Ethics, Accountability, Advocacy, Spirit of Inquiry, Collaboration and collegiality, Autonomy and Innovation & visionary. To derive common factors reflecting professionalism, exploratory factor analysis was used. Principal component analysis resulted in the extraction of a single 6-item latent factor. Professionalism is a multi-faceted concept that offers opportunities for nurses’ personal and professional growth.³² This key trait is the

relationship involving the nurse and the patient. Nursing professionalism mirrors the approach in which nurses analyze their work and serves as a lead in their practice towards ensuring patient safety and quality care.^{11,32} The code guides and assists nurses at every phase of nursing practice from carrying out responsibilities of prevention of illness, promotion and restoration of health, and alleviation of suffering among individuals, families and communities.⁴ It is a vehicle for self and peer-evaluation of the care quality delivered to consumers. It provides ethical framework and standards for practice.⁶ Nurses need to be aware of the important professionalism accents, attitude and behaviours that will aid in the formulation of their identity as indispensable health care providers. Multi-source feedback can be considered as an important method in exploring these behaviours.²⁵ **Limitations:** This research has a few limitations. Self reported data from the respondents could involve social desirability bias although multisource feedback was obtained. The busy schedule amidst the shortage of nurses and the complexity in the wording of the items could have led to some amount of response error.

Conclusion

Every practicing nurse is expected to share the responsibility of self-regulation and practice in accordance with the professional standards and code of ethics as these define values and beliefs in nursing profession. This code is viewed as a professional legitimacy for considering nursing as a profession and an essential tool that facilitates nurse practice. The instrument can be used to explore professionalism and gather baseline data through individual nurses' self-reflection or as multi-source feedback of professional behaviour within varied practice settings in a developing country like India. Further studies comparing nurses working in private and public settings, and comparison among nurses working in different areas can be conducted using the scale.

Abbreviations

RNAO-BPG

Registered Nurses Association of Ontario-Best Practice Guideline

NPS

Nurse Professionalism Scale

I-CVI

Item Content Validity Index

S-CVI

Scale Content Validity Index

EFA

Exploratory Factor Analysis

AMOS

Analysis of Moment Structures

CMIN/DF

Chi-Square by Degrees of Freedom

GFI
Goodness of Fit Index
TLI
Tucker Lewis Index
CFI
Comparative Fit Index
RMSEA
Root Mean Square Error of Approximation
SEM
Structural Equation Modeling
SPSS
Statistical Package for Social Sciences

Declarations

1. **Ethics approval and consent to participate:** Approval is sought from the Institutional ethics committee, Goa Medical College and hospitals, and Ethical committee, Directorate of Health Service, Government of Goa. Informed consent was sought from the participants.
2. **Consent for publication:** Not applicable
3. **Availability of data and materials:** The datasets is not provided as the same is part of the data which the researcher is currently using to pursue the Doctoral degree. However the data can be made available from the corresponding author on reasonable request.
4. **Competing interests:** The authors declare that they have no competing interests
5. **Funding:** Nil
6. **Authors' contributions:** Both authors have substantial contributions in this work.
7. **Acknowledgements:** Not Applicable

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Figures

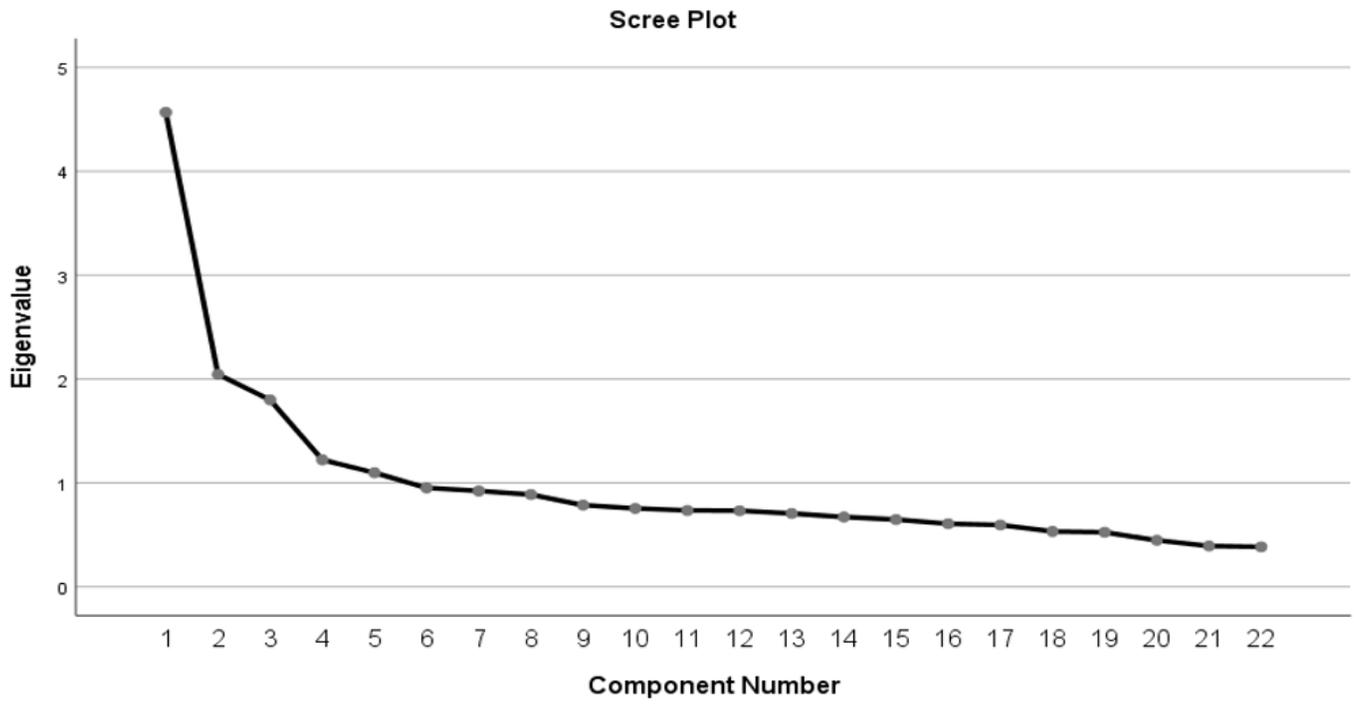


Figure 2

Scree test plot indicating extraction of Factors