Original Article

# Development and Validation of Questionnaire assessing Knowledge, Attitude and Practice about Neuro-Physiotherapy among Healthcare Students and Professionals

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**Abstract**

**Background:** Neuro-physiotherapy plays a crucial role in the rehabilitation of individuals with neurological disorders, aiming to optimize functional abilities and enhance quality of life. This study outlines the development and validation of a comprehensive questionnaire designed to assess knowledge, attitude and practice by recognizing the importance of understanding the current landscape of neuro-physiotherapy with healthcare education and practice.

**Method:** A self-constructed questionnaire assessing the knowledge, attitude, and practice of neurophysiotherapy treatment among health care students and professionals was developed, followed by content validation by an expert panel. Content Validity Index was used to validate the questionnaire domains. Pilot testing was conducted on 25 students and 25 professionals, in which the developed questionnaire was administered. The validity and reliability of the questionnaire were analyzed using the Item-Total Correlation and Cronbach's alpha, respectively.

**Results:** The computed content validity index of the questionnaire was 0.9. The reliability of the questionnaire for students and professionals was found to be 0.915 and 0.949, respectively, and the item total correlation with respect to all domains was recorded to be greater than 0.30, which is the standard for validation in both students and professionals.

**Conclusion:** The developed questionnaire achieved a statistically satisfactory content validity and is suitable for assessing knowledge, attitude and practice about neurophysiotherapy treatment among the healthcare students and professionals.

**Key Words:** Neurological Physiotherapy; Neurorehabilitation; Healthcare; Survey; Rehabilitation

## Introduction

Physiotherapy is one of the earliest specialties in the medical field that focuses on the patient's comprehensive rehabilitation.[1] Injuries and illness have increased over decades. As members of the healthcare team, physical therapists are crucial in minimizing hospital stays, promoting more efficient healing, and facilitating rehabilitation for improving the quality of life.[2] The profession of physiotherapy has also developed and grown from its general

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applications to specialized field of physiotherapy that provides services to healthcare facilities.[2,3] Neuro-physiotherapy is one of the mainstream physiotherapy branches with tremendous potential and prospect. "Neuro-physiotherapy", also referred to as "neurological physiotherapy" is a type of rehabilitation used to treat the functional, physical, emotional and cognitive issues caused due to neurological illness.[4]

Neuro-physiotherapy differs from traditional physiotherapy as it takes advanatage of the phenomenon known as neuroplasticity. Neuro-plasticity is the brain's and neural structures' capacity to reorganize themselves in response to disruption, which can aid in a wide range in the restoration of function.[5]

The impact of neurological illnesses on global health is significant.[6] Neurological conditions are a leading cause of death and morbidity globally, according to the Global Burden of Diseases, Injuries and Risk Factors survey.[7] Individuals who suffer from these conditions can have a devastating impact on their lives as well as those of their family and friends.[8] Dysfunction of neural system may cause a variety of physical, emotional and cognitive symptoms and these may have an effect on the quality of their lives.[9] To prevent and treat motor dysfunction and its consequences, as well as to promote functional independence, intensive neuro-physiotherapy treatment is essential.[10]

Due to aging and population growth, neurological disorders are expected to become more common in India and around the world.[11]For patients to receive optimal treatment, there must be interdisciplinary collaboration between all the medical sciences.[12] To do this, team members who are capable of providing patient care must be acknowledge, respected and understood for their abilities and skills.[2]

Following a review of literature, it has been found that people identify orthopaedics and sports as key areas of specialty in physiotherapy.[2,12,13] There is limited knowledge about neuro-physiotherapy among other health care professionals, which may impede the effective and prompt referral of the patients. This may also interfere in delivering goal-oriented treatment due to lack of collaborative approach. As a result, many neurological patients do not have access to specialists for neurophysiotherapy treatment.

Thus, there is a need for collaboration in neuro-physiotherapy treatment among health personnel from various professional backgrounds, as interdisciplinary team is capable of meeting the demands of patients with neurological conditions.[14] As a result, the present study focuses on to develop a questionnaire to assess health care students and professionals' knowledge, attitude and practice related to neuro-physiotherapy treatment.

## Methodology

Institutional Ethical Board approved this study and the study was carried out in two phase. The first phase included the development and the content validation of the questionnaire (KAPA-NPTHCSP) and the second phase included assessment of validity of the developed questionnaire.

### Phase I

**Development of Questionnaire:** This phase primarily concentrated on domain recognition and item generation. A thorough review of the existing literature was done to find out the current state of knowledge, attitude, awareness and practice related to physiotherapy among the various healthcare professionals. However, we discovered that there is no specific tool that addressed knowledge, attitude and practice about neurophysiotherapy treatment. Three domains were identified knowledge, attitude and practice. The "knowledge" questions were designed to assess knowledge of specific neurophysiotherapy techniques, patient outcomes, and treatment approach. The "attitude" questions were developed to understand practitioners beliefs, values and perception regarding neurophysiotherapy treatment. The "practice" domain covered questions focused on the referral of patients to neurophysiotherapy rehabilitation. Each domain consisted of 10 items and the questionnaire was draft.

**Content Validation:** The content validation of the questionnaire was measure through a process of expert validation. This process involved selection of a panel of experts to review and evaluate the questionnaire the panel consisted of ten experts in the field of neurophysiotherapy with a minimum experience of 10 years in the field. The experts were sent an online content validation form with clear instruction. Evaluation of the clarity and relevance of items was done using 4 point Likert Scale, ranging from 1 to 4 where, 1= not relevant; 2= somewhat relevant; 3= quite relevant; 4= highly relevant. The Content Validation Index (CVI) was calculated for each item by dividing the number of experts who rated the items as 3 or 4 by the total number of experts. The average CVI across all items was computed to determine the overall content validity of the questionnaire. The final copy of questionnaire consisted of 2 parts. First part consisted demographic characteristics, the second part consisted of 30 items labelled into 3 domains as follows: (1) Knowledge- 10 items, scored 0 to 3 where 0= no knowledge and 3= know very well. The overall scoring of the domain ranges from 0 to 30, where 1-10= limited knowledge; 11-20= moderate knowledge; 21-30= satisfactory knowledge (2) Attitude- 10 items, scored 0 to 3 where 0= never and 3= always. The overall scoring of the domain ranges from 0 to 30, where 1-10= negative attitude; 11-20= neutral attitude; 21-30= positive attitude (3) Practice- 10 items, scored 0 to 3 where 0= never and 3= always. The overall scoring of the domain ranges from 0 to 30, where 1-10= poor practice; 11-20= fair practice; 21-30= good practice. The overall scoring of this self developed questionnaire ranges from 0 to 90 where 0-30= fair; 21-60= good; 61-90= excellent. The copyright of the questionnaire is registered.

## Phase II

Validity of Questionnaire: A pilot study was conducted to validate the KAPA- NPTHCSP questionnaire with a sample of 50 (25 health care students and 25 professionals) from diverse Healthcare Institutions of Belagavi City. Convenience sampling technique was used. Prior to the commencement of the study, the subjects were explained about the study and obtained a written informed consent from them following which the developed questionnaire was administered face-to-face. The health care students (pursuing postgraduate program: Medical, Dental, Allied Health Sciences, Ayurveda, Homeopathy) and professionals of all genders, were included, where as participants not willing to participate and individuals of physiotherapy field were excluded from the study.

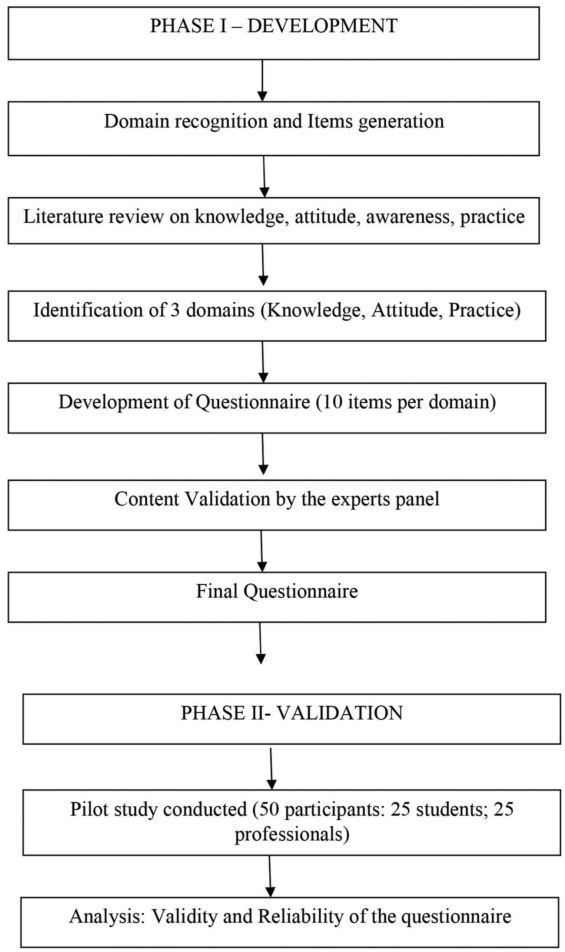


**Figure 1: Flowchart summarizing the questionnaire development and validation process**

## Statistical Analysis

The content validity index for the expert review was analysed by using Microsoft Excel Sheet 2016. The data were summarized by using a descriptive statistics. The validity and reliability was analysed using the Item- total correlation and Cronbach's

Alpha respectively. The collected data in this study was statistically analysed using SPSS version 23.

## Results

The questionnaire domain validity was assessed using the item-level content validity index (I-CVI). The I-CVI scores for knowledge, attitude and practice domains were 0.91, 0.95 and 0.84 respectively. The CVI value of the questionnaire was found to be 0.9. The acceptable cut- off score of CVI values for least 9 experts is 0.78.[15] A validation and reliability study included 50 subjects: 25 P.G students and 25 professionals of different specialty (Figure 2). The age of all the subjects lied between 23 to 55 years, out of which 32 were males and 18 were female.

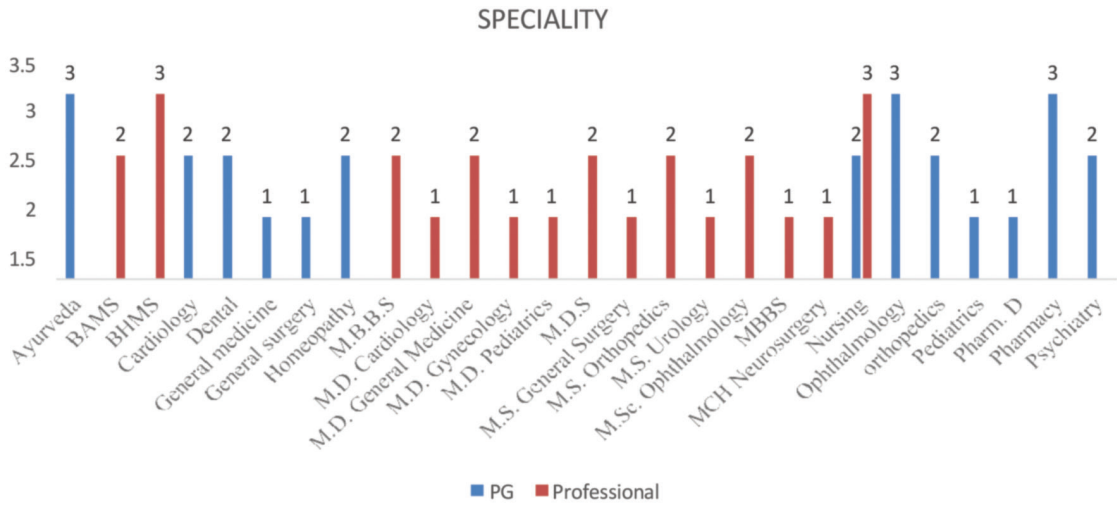


**Figure 2: Specialty of P.G. students and Professionals**

## Item Reliabilty

KAP about neurophysiotherapy treatment was analyzed with the help of 30 questions, 10 questions in each domain and respondents were requested to provide their views on the listed statements. In order to determine the reliability of the respondents; Cronbach's Alpha values were analyzed. For P.G. students, it was observed that the KAP domains scored at 0.858, 0.892, 0.854 respectively and the overall was 0.915. Whereas for the professionals, scores for KAP domains were 0.906, 0.857 and 0.897 respectively and the overall was found to be 0.949 that is statistically excellent. (Table 1, 2)

**Table 1. Item Reliability of each domain of KAPA-NPTHCSP**

| Domains | Cronbach's Alpha for Students | Cronbach's Alpha for Professionals | No. of items |
|---|---|---|---|
| Knowledge | 0.858 | 0.906 | 10 |
| Attitude | 0.892 | 0.857 | 10 |
| Practice | 0.854 | 0.897 | 10 |

**Table 2. Reliability analysis of KAPA- NPTHCSP**

| Questionnaire | Cronbach's Alpha for Students | Cronbach's Alpha for Professionals |
|---|---|---|
| KAPA- NPTHCSP | 0.915 | 0.949 |

## Item Total Corelation of The Domains

The validity analysis was carried out using Item- Total Correlation. The correlation values for knowledge in students and professionals are 0.7 and 0.8 respectively. For attitude in students and professionals are 0.8 for both but Q2A for students has to be eliminated as it showed lower reliability. For practice in students and professionals are 0.7 and 0.8 respectively but Q7P and Q10P for students has to be eliminated as these showed lower reliability. (Table 3) And the overall in students and professionals showed 0.6 and 0.8 respectively.

**Table 3. Item-Total Correlation**

| | Knowledge for Students | | Knowledge for Professionals | | | Attitude for Students | | Attitude for Professionals | | | Practice for Students | | Practice for Professionals | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | CITC | CAID | CITC | CAID | | CITC | CAID | CITC | CAID | | CITC | CAID | CITC | CAID |
| Q1K | .744 | .830 | .461 | .907 | Q1A | .499 | .746 | .310 | .857 | Q1P | .651 | .765 | .693 | .883 |
| Q2K | .722 | .830 | .456 | .907 | Q2A | | | .548 | .845 | Q2P | .633 | .773 | .698 | .882 |
| Q3K | .622 | .840 | .765 | .890 | Q3A | .648 | .733 | .862 | .813 | Q3P | .639 | .763 | .822 | .873 |
| Q4K | .430 | .856 | .478 | .906 | Q4A | .482 | .746 | .720 | .828 | Q4P | .764 | .744 | .735 | .880 |
| Q5K | .410 | .859 | .819 | .887 | Q5A | .493 | .746 | .331 | .859 | Q5P | .646 | .760 | .805 | .874 |
| Q6K | .342 | .862 | .665 | .898 | Q6A | .625 | .730 | .436 | .857 | Q6P | .581 | .771 | .497 | .895 |
| Q7K | .598 | .842 | .773 | .889 | Q7A | .729 | .720 | .572 | .843 | Q7P | | | .527 | .895 |
| Q8K | .632 | .839 | .752 | .891 | Q8A | .840 | .703 | .487 | .849 | Q8P | .483 | .784 | .625 | .888 |
| Q9K | .596 | .846 | .788 | .888 | Q9A | .567 | .737 | .792 | .821 | Q9P | .791 | .743 | .647 | .886 |
| Q10K | .626 | .839 | .665 | .896 | Q10A | .646 | .731 | .834 | .823 | Q10P | | | .350 | .902 |

**(CITC - Corrected Item-Total Correlation, CAID - Cronbach's Alpha if Item Deleted, Q – Question, K – Knowledge, A – Attitude, P – Practice)**

As seen in the above table, all statements have suggested medium to strong correlation and have recorded correlation value higher than 0.30 which is a standard for validation.

## Discussion

There exists no tool to assess the knowledge, attitude and practice about neurophysiotherapy treatment among healthcare students and professionals. Thus this study aimed to develop and validate a questionnaire to assess the same. As neurophysiotherapy stands at the forefront of rehabilitation, offering vital interventions to enhance the lives of individuals with neurological disorders. However, the effectiveness of neurophysiotherapy interventions relies not only on skills but also on the KAP of healthcare students and professionals. The primary objective of present study is to develop a questionnaire that evaluates the KAP levels related to neuro-physiotherapy and determine the validity and reliability of the KAPA-NPTHCSP questionnaire.

In terms of knowledge the results of the validation demonstrated that the questionnaire can effectively assess the key aspect of neurophysiotherapy treatments- like principles, methods, frameworks, along with knowing when to refer. The previous studies have analyzed that among the other healthcare professionals, physiotherapists are not extensively recognized in administering treatment to the aforementioned patients. Physiotherapy is predominantly acknowledged for its efficacy in orthopedic cases (96%) and sports injuries (80%). The role of physiotherapy in promoting fitness (70%) and addressing neurological conditions (50%) was noted.[16] A research conducted by Karthikeyan P et.al., has revealed a deficiency in the understanding of physiotherapy and its significance among the

surveyed health professionals, which is presumably indicative of the broader health professional community's knowledge base. Consequently, there exists an imperative necessity to enhance educational initiatives pertaining to physiotherapy and rehabilitative services for all categories of health personnel.[17] According to a similar study, medical interns are less likely to possess sufficient knowledge. Since the medical interns will eventually become doctors, it is crucial to teach them about physical therapy through various approaches. This provides them with timely and suitable patient referrals, which will improve patient care and benefit the healthcare system as a whole.[18] Thus evaluating knowledge domain and identifying gaps in education and training according will ensure that the care provided is both comprehensive and specific to the challenges faced by patients.

The attitude component is another crucial element as it influences professionals behavior, guiding whether healthcare workers embrace neurophysiotherapy and integrate it into care. Evaluating attitude is important as it helps assess aspects like acceptance, receptivity and willingness to adopt new practices. According to a survey, clinical physicians' opinions on the physiotherapy field were largely unfavorable. By increasing public awareness, physiotherapy academics and practitioners can help doctors' preconceptions about their services be dispelled. It should be encouraged for medical practitioners to take part in official physiotherapy education and training.[19] Where as a study conducted by Raissi GR et.al., the inadequate rehabilitation training provided to medical students was amply demonstrated and this results can be taken into account for developing and modifying teaching programs towards rehabilitation.[20] Positive attitudes can foster collaboration among healthcare teams, while negative ones might reduce teamwork. Assessing the attitude domain helps to uncover potential misconceptions about neurophysiotherapy and recognizing these barriers allows for targeted educational training initiatives, in turn leading to enhanced patient care and improved rehabilitation outcome.

Practice domain is a part of KAP study as it focuses on how healthcare professionals apply what they know in real-world situations about neurophysiotherapy. This is vital because evaluating practice helps us understand how knowledge and attitudes are translated into actual patient care. Based on a study, healthcare professionals agree to use a multidisciplinary approach to disease management, but they lack the knowledge about physiotherapy services to send their patients to the appropriate specialists. In fact, for usual complaints like pain in the back, doctors frequently send the patients to neurosurgeons or orthopedic surgeons.[21] Analysis of current practices can revel discrepancies between what is known and what is done. Such gaps might indicate the need for further training, better resources ultimately leading to enhance patient care and advance professional growth.

The validation outcomes indicated that the questionnaire is capable of eliciting perspectives on the significance of neurophysiotherapy concerning patient care and its contribution to rehabilitation processes. The questionnaire possesses substantial ramifications for medical education, clinical practice, and the identification of areas necessitating enhancement. It yields insights into the attitudes, behaviors, and knowledge deficiencies of healthcare practitioners within clinical environments, thereby aiding in the formulation of specialized training initiatives and quality enhancement strategies. Furthermore, in the realm of healthcare education, it promotes the creation of targeted educational interventions aimed at augmenting neurophysiotherapy competencies among both students and professionals.

## Limitations and Recommendations

The limitation of the study was that in the KAPA-NPTHCSP questionnaire there was no correlation between very few items from attitude and practice domain only for student population but the researcher decided to use all the items for research purpose. Although the items were verified by experts' opinion. Assessing changes in KAP over time among healthcare students and professionals can provide

valuable insights into the effectiveness of educational interventions, changes in practice, and evolving attitudes towards neuro-physiotherapy treatment. Longitudinal studies could help identify areas of improvement and track progress in enhancing neuro-physiotherapy knowledge and practice.

## Conclusion

This study represents a significant step toward improving neurophysiotherapy education and practice. The developed questionnaire provides a validated framework for assessing KAP among healthcare professionals, paving the way for enhanced interdisciplinary collaboration and patient-centered care in neurorehabilitation. Addressing the identified gaps through education and training will ultimately contribute to the optimization of neurophysiotherapy treatment strategies and better healthcare outcomes for individuals with neurological disorders.

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