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Original Research Article

Development and validation of questionnaire to assess knowledge, attitude and awareness about stroke among young population

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ABSTRACT

Background: Stroke is a neurological condition which is caused by disturbed blood supply to the brain, causing mental, physical and social impairment. Stroke prevalence in young individuals is rising globally, as well as in India. The young population is still ignorant about stroke and thinks of it as an illness of the elderly. Due to lack of understanding and education about ailment, one contributing aspect maybe one's attitude towards the condition. Considering these factors this questionnaire was developed.
Method: The knowledge, attitude and awareness–questionnaire was developed and validated in 2 phases. In phase I, development and content validation of the questionnaire were done, and in phase II, a pilot study was done on the population for validation, and participants were interviewed using a self-developed questionnaire.
Results: The computed content validity index (CVI) for the questionnaire was found to be 0.92. The Cronbach's Alpha values were determined to be 0.947, 0.909, 0.887, respectively, reflecting strong internal consistency. The overall benchmark is 0.95 which is statistically excellent for validity of outcome
Conclusion: The KAAS-SYP, designed to evaluate knowledge, attitude, and awareness about stroke among young populations, demonstrated statistically robust content validity and excellent reliability. While the young population shows an understanding of the term "stroke," there is limited awareness of its risk factors and warning signs. Furthermore, their attitude towards stroke tends to be less positive, highlighting the need for targeted educational and awareness initiatives.

Keywords: Stroke, Young population, Knowledge, Attitude and awareness

INTRODUCTION

Stroke is a major global health concern, defined by the World Health Organization (WHO) in 1970 as a "rapidly developed clinical sign of focal (or global) disturbance of cerebral function, lasting more than 24 hours or leading to death, with no apparent cause other than vascular origin.[1] Recognized as one of the leading brain disorders by WHO, stroke is a major contributor to permanent disability and imposes considerable socioeconomic and psychological burdens.[2] In India, the situation is alarming; it is currently the fifth most common cause of disability and the third most common cause of death. Research shows that its prevalence ranges from 1.27 to 2.20 cases per 1,000 people.[3,4] According to the Indian global burden of disease study 1990-2019, stroke accounted for the majority of disability-adjusted life years (DALYs) and the majority of fatalities from neurological illnesses in India.[5]

Globally, strokes are hitting younger people more frequently. It's now the fifth leading cause of death among individuals aged 15 to 50. Out of the 11 million new stroke cases reported every year, 2 million involve individuals between 18 and 50 years old-a number that keeps growing.[5,6] Over the previous 20 years, there has been a rise in the incidence of stroke, primarily ischemic stroke,

among young adults. This collaterals with an increase in traditional risk factors such as hypertension, diabetes, use of tobacco, and use of illicit substances among young stroke patients.[7]

Previous studies have shown that young stroke patients have a high incidence of modifiable vascular risk factors, which contribute to a nearly 12% risk of recurrent cardiovascular events and increased 5-year mortality.[8] There are two types of risk factors: modifiable and nonmodifiable.[9,10] Factors that can be modified include high blood pressure, diabetes mellitus, and dyslipidaemia, lifestyle changes. Lifestyle changes include consuming fast food, smoking, drinking alcohol, rarely exercising, and lack of activity, disturbed sleep cycle.[10,11]

Despite these trends, there is a common misconception among young adults that stroke predominantly affects older individuals. This misconception often leads to the neglect of early symptoms, resulting in delayed diagnosis and treatment initiation.[8,12] The physical, psychological, social, and economic aspects of life would suffer because of the rise in stroke cases at an early age. The effects on physical and mental health, such as depression, stress, and disabilities in individuals who are dependent on others, are most common.[13]

In spite of this, there remains a substantial knowledge gap regarding stroke prevention and awareness, particularly among young populations. Studies evaluating baseline knowledge, attitudes, and practices are crucial to developing effective prevention and control strategies.

Young population-based awareness studies assessing baseline knowledge attitudes and practices are essential for effective stroke prevention and control strategies.[4] Very few strokes awareness Indian studies have been conducted in the general population. This study aims to fill the gap, providing valuable insights into effective strategies for preventing strokes in the young population through lifestyle modification. Considering the notable rise in stroke occurrence in emerging nations, the result of this study might provide light on knowledge and awareness of stroke in the young population.

METHODS

Study type

This was an exploratory study.

Study place

Belagavi city.

Study duration

The study duration was of 6 months from November 2023-April 2024.

Inclusion criteria

Individuals between the ages of 18-30 years willing to participate in the study. Exclusion Criteria: Individuals with neurological disorders like dementia, epilepsy, autism and psychological disorders.

The study was approved by the Ethical Board Committee of the Institute. The study was conducted in two phases.

Phase I

The investigator constructed a questionnaire to assess the knowledge, attitude and awareness about stroke in the young population. The knowledge, attitude and awareness about stroke in the young population (KAAS-SYP) were developed in 2 stages: Stage 1 Item generation, Stage 2 expert review and the final drafting of the questionnaire.

Stage 1

Defining the domain which is being undertaken is the first step. This is known as “item generation” and is based on the recognition of items and describing the relevant domain.[14,15] The items were considered after reviewing the available literature, which stipulated that there is a lack of knowledge, attitude and awareness towards stroke among the young population. The questionnaire was divided into 3 domains – Knowledge, Attitude and Awareness.

Stage 2

Content validation and evaluation was done by 15 experts. The experts who volunteered for validation were Neurology physiotherapists. Among 15 experts, 8 experts participated in round one of validation. Likert rating was selected for scoring of components of domains. After formulating the basic design of a questionnaire, expert validation was done, it included each of the domain and the overall questionnaire to determine whether they represent the domain of interest.

Based on evaluation and scoring by the experts for each domain, items were modified, and the other 7 experts participated in round two of content validation. The items were modified on the basis of (i) Not relevant, (ii) Somewhat relevant, (iii) Quite relevant, and (iv) Highly relevant. The content validity was computed by rearranging the scores of 3,4 as 1 and 1,2 as 0.16,17,18 Content validity index was computed by calculation of scale average. Questionnaire modification was done accordingly, and the final draft was made.

Phase II

After the final drafting of the questionnaire, the pilot study was conducted to validate the KAAS-SYP questionnaire from different areas of Belagavi city. The applied method of sampling was cluster sampling. Prior to the

commencement of the study, the subjects were explained about the study and written inform consent was obtained.

Statistical analysis

The content validity index for expert review was analysed for rounds 1 and 2 by Microsoft Excel sheet with the components, item-level content validity index (CVI-I), scale level content validity index based on universal agreement method (S-CVI-UA) and average calculating scores components was analysed and the total score was interpreted.

RESULTS

For the pilot study 70 questionnaire were given out of which 57 responded, in which 36 were male and 26 were female participants between the age group of 18-30 with mean age of 23.2. The participants were of different occupations such as students (BPT, BBA, MBA, MBBS,), engineering, desk job, business, etc (Table 1, Table 2).

The validity of the questionnaire domains was assessed using the Content Validity Index for Individual items (CVI-I). For domain 1, which focused on knowledge, the CVI-I score was determined to be 1. This indicates unanimous agreement among the experts regarding the relevance of the items in this domain.

For domain 2 (attitude) and domain 3 (awareness), the CVI-I scores were 0.8, reflecting a good level of agreement, though slightly lower than domain 1. These scores were derived during the first round of evaluation, where eight experts rated the relevance of the questionnaire items. The results underscore a strong content validity across all domains, with knowledge being particularly well-received (Table 3).

Following the feedback provided by experts in the first round, the questionnaire was revised to incorporate the suggested corrections. The updated questionnaire was then subjected to a second round of validation. In this round, seven experts evaluated the relevance of the items in each domain.

The content validity index for Individual items (CVI-I) scores for domain 2 (attitude) and domain 3 (awareness) improved to 1, indicating unanimous agreement on their relevance. Meanwhile, the CVI-I score for domain 1 (knowledge) was 0.8, reflecting a good level of agreement, though slightly lower than the other domains. These findings highlight the improved validity of the questionnaire after the revisions (Table 4).

The S-CVI/Ave was calculated from the total CVI-I divided by the total number of items. S-CVI/UA was calculated by summing the number of items that had 100% agreement and dividing by the total number of items. The S-CVI/Ave score for the questionnaire is 0.99, according to the rating of all 15 experts. For the pilot study, 70 questionnaires were given, out of which 57 responded, in which 36 were male, and 26 were female participants between the age group of 18-30 with a mean age of 23.2. The participants were of different occupations, such as students, engineering, desk job, business, etc.

Table 1: Descriptive statistics for age.

(n=57)	Range	Mean	S.D.
Age (years)	18 to 28	23.2	2.7

Table 2: Distribution of gender and occupation.

		Frequency	%
Gender	Male	31	54.4
	Female	26	45.6
Occupation	Accounting	2	3.5
	Artist	1	1.8
	Business	4	7
	CA	1	1.8
	Chef	1	1.8
	Desk job	4	7
	Engineering	5	8.8
	Hotel manage	1	1.8
	House wife	1	1.8
	IT	1	1.8
	Marketing	4	7
	Salon	2	3.5
	Shop owner	1	1.8
	Stock market	1	1.8
	Student	26	45.6
	Worker	2	3.5

Correlation of the domains

The Pearson correlation coefficient ("r") was used to find the relation between knowledge, attitude, and awareness. The knowledge, attitude, awareness and overall scoring were positively correlated ($p<0.05$) with each other. There was a positive correlation between all three domains that are knowledge and awareness domains, knowledge and attitude domains and attitude and awareness domains (Table 5).

Item reliability

KAA about stroke in the young population was analysed with the help of 30 questions,10 questions in each domain, and the respondents were requested to provide their views on the listed statements.

In order to assess the reliability of the respondents, Cronbach's Alpha value was analysed. The Cronbach's Alpha value is 0.947, 0.909 and 0.887, respectively which is statistically very good, and the overall value is 0.95, which is statistically excellent.

Table 3: Content validity index for round 1 based on the rating of relevance of items by 8 experts.

Items	Expert 1	Expert 2	Expert 3	Expert 4	Expert 5	Expert 6	Expert 7	Expert 8	I-CVI
Domain 1	1	1	1	1	1	1	1	1	1
Domain 2	1	1	0	1	1	1	1	1	0.8
Domain 3	1	1	1	1	1	0	1	1	0.8
CVI average									0.86

Table 4: Content validity index for round 2 based on the rating of relevance of items by 7 experts.

Items	Expert 1	Expert 2	Expert 3	Expert 4	Expert 5	Expert 6	Expert 7	I-CVI
Domain 1	1	1	1	0	1	1	1	0.85
Domain 2	1	1	1	1	1	1	1	1
Domain 3	1	1	1	1	1	1	1	1
CVI average								0.95

Table 5: Relationship between knowledge, Attitude and Awareness.

		Knowledge	Attitude	Awareness	Overall scoring
Knowledge	"r"	1	0.788	0.876	0.937
	p value	--	< 0.001*	< 0.001*	< 0.001*
Attitude	"r"		1	0.896	0.942
	p value		--	< 0.001*	< 0.001*
Awareness	"r"			1	0.970
	p value			--	< 0.001*
Overall scoring	"r"				1
	p value				--

("r"=Pearson correlation coefficient; * Significant)

DISCUSSION

This study focuses on the development of a questionnaire to assess the knowledge, attitude and awareness among the young population regarding stroke. There was a total of 30 items segregated into 3 different domains knowledge, Attitude and Awareness. The items were generated from the point of view of young individuals. The questionnaire was developed based on a comprehensive literature review and expert input and underwent rigorous validation, including content validity and reliability analysis. The present study aimed to develop a questionnaire about stroke among the young population.

The present study also focused on determining the validity and reliability of a self-constructed questionnaire KAAS-SYP. The procedure of developing a questionnaire entails item conception and then validating the items. Phase I was done in two stages. In stage I, domain construction and item generation were done, and in stage II, expert validation, content validity index, items modification and final drafting of the questionnaire were done.

Content validity evaluates each item's representatives and relevance to a certain area based on expert reviews. All 30 items were evaluated by CVI for their applicability in capturing the domain's usefulness. According to the findings, the questionnaire's CVI score of 0.92 meant that every item was pertinent to the topic, strong, and understandable for the intended audience. The responses were recorded on the basis of the Likert scale with a 4-point Likert scale for knowledge, attitude and awareness. In phase II, a pilot study was done, and the questionnaire was incorporated among the young population.

In this study more than one third of the population has limited knowledge of stroke that is score between 1-10 which agrees with the previous studies done. Approximately more than two third of the population were unaware that stroke is the brain disorder. This result was similar to result obtained in Northwest India and Nepal.[21,22] However, a study conducted among urban residents in Australia revealed that 73% of respondents correctly identified the brain as the stroke's target organ.[23] About three forth population has no knowledge about the golden hour and how to deal with a person who is developing stroke this study is comparable to the one conducted in Bangladesh.[24]

The awareness about the signs and symptoms of the stroke such as trouble speaking, sudden nose bleed, vomiting was not satisfactory which is similar to the study done in Bengal.[25] Half of the population is not aware about the risk factors of stroke which is contradicted with other studies where more than two third of the population has the

identified smoking and hypertension as the risk factors for stroke.[21,23] This can be due to different study design.

More than one fourth of the population has negative attitude and about one third population has neutral attitude about stroke. The population does believe that the young generation should take Stroke as serious health concern but very few of them believe that their habits and life style changes can lead to stroke. Many of the population is ignorant about the warning signs of stroke as they think it might be some minor thing like migraine and ignore it.[23,25]

A study done by Adusumilli et al stated that there is low awareness about stroke in adults of the urban population.[4] This questionnaire is designed to cater to the specific requirements and viewpoints of young people, in contrast to previous stroke knowledge surveys that have mostly targeted older folks. Young adults often have different levels of stroke risk awareness and health behaviours compared to older populations. They have different levels of stroke risk awareness and health behaviours compared to older populations.

The questionnaire covers important aspects such as stroke risk factors, warning signs, emergency response, and post-stroke rehabilitation. Assessing attitudes towards stroke prevention and management is also crucial, as positive attitudes can motivate healthy behaviours and treatment adherence. The questionnaire can be used to evaluate the effectiveness of stroke awareness campaigns and educational programs aimed at young adults.

The result of content validity is 0.92, indicating that the questionnaire items were clear, relevant and appropriate for the target population. The content validity index (CVI) was high, demonstrating that the questionnaire adequately covered the key domains of stroke knowledge, attitudes and awareness. There was a positive correlation between the knowledge and awareness domains, knowledge and attitude domains and attitude and awareness domains. The Cronbach's Alpha value is 0.947, 0.909 and 0.887 for the knowledge, attitude and awareness domains, respectively. Hence, KAAS-SYP can be used to assess knowledge, attitude and awareness about stroke in the young population. The questionnaire can serve as a valuable tool for public health interventions targeting stroke prevention and awareness among young adults. By identifying specific areas of deficiency in knowledge and attitudes, tailored interventions can be designed to address these gaps effectively.

The limitation of this study is that the questionnaire was validated in a single geographic region. Further validation in diverse cultural and linguistic contexts is needed to ensure its cross-cultural applicability.

CONCLUSION

This study presents a valid and reliable questionnaire to assess stroke-related knowledge, attitudes and awareness among young adults. The questionnaire can be used as a research tool to identify gaps in stroke literacy and inform targeted interventions to improve stroke prevention and management in this population. Future research should focus on implementing and evaluating the questionnaire in diverse settings and populations.

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