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Misconceptions about Severe Traumatic Brain Injuries among Health Care Professionals in a Tertiary Care Center

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Abstract

Background: Traumatic Brain Injury is a neurological condition that affects millions of people every year and is a serious health concern- insufficient knowledge about traumatic brain injury held by both the general population and medical experts. Healthcare professionals who treat patients with TBI seem to have a general lack of understanding and misconceptions regarding brain injuries. Addressing and reducing TBI-related misunderstandings in clinical practices requires a grasp of basic concepts. **Aim and Objective:** The objective of this study is to assess the misconceptions about severe traumatic brain injury among health care professionals (physicians, nurses, and physiotherapists) in a tertiary care centre. **Method:** This is a cross-sectional study with a convenience sample of 120 healthcare professionals was employed. Participants in the study were ensured that healthcare professionals had sufficient exposure to TBI. The purpose of the 40-item self-report questionnaire, the CM-TBI, was to measure respondents' understanding of TBI, its consequences, and rehabilitation. **Result:** The results indicate that there is a significant difference between the groups regarding the assumption that recovery from a brain injury takes around five months (Chi-Square = 8.454, df = 2, p = 0.015). Similarly, the belief that a person who has a brain injury 'just like new' in several months also shows significant differences among the health care professional groups (Chi-Square = 25.860, df = 2, p = 0.000). Unexpectedly, replies from health care professionals to certain questions, such whether or not seatbelt use prevents more injuries than it causes or whether it is safer to be trapped within an accident than to be thrown clear, do not significantly differ from one another. **Conclusion:** Professional background may influence perceptions, emphasizing the importance of tailored educational interventions within each professional group to address potential misconceptions and enhance knowledge about severe traumatic brain injuries.

Keywords: Health Care Professional, Misconceptions, Prevention, Rehabilitation, TBI

1. Introduction

Traumatic brain injury (TBI) is a neurological state that impacts millions of people every year and is a serious health concern. According to estimates, up to 69 million people worldwide are believed to suffer a TBI[1]. The severity of traumatic brain injury can vary from minor to severe depending upon the level of brain damage. Injury is classified as severe if the GCS score is less than 8. Symptoms such as headaches, lightheadedness, disorientation, memory loss, difficulty in focusing, mood swings, and even moments of consciousness damage are considered manifestations[2]. In India, the most common cause of morbidity, mortality, disability, and financial loss is TBI[3]. India's growing economy has resulted in higher vehicle densities as a result of industrialization and urbanization, which has significantly raised the country's

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TBI rate. While injuries and fatalities can happen to anyone at any age, mostly happen to young people and more frequently to men[4]. To lessen the incidence of TBIs, India and other emerging nations must overcome significant obstacles in the fields of rehabilitation, pre-hospital care, and preventive given to quickly changing environments[5]. Thus, both the general public and medical experts should have a sufficient awareness of traumatic brain damage. However, even though traumatic brain damage is prevalent and has effects, family members and medical professionals who care for people with traumatic brain injury seem to have misconceptions and a lack of awareness regarding brain injuries[6]. Misconceptions that lead to interpreting concepts, things, or events incorrectly. They are often characterised as false beliefs or myths around a certain subject[7]. The most prevalent myths regarding TBIs are wearing seatbelts, the consequences of unconsciousness, the abilities of those who have TBIs, memory loss, brain damage, and recovery (the extent and duration of recovery)[8]. Various particular myths about TBI have been found in the literature so far. Little research has been done on the underlying causes of these myths' creation and perpetuation, as well as how they affect the prognosis of injuries and the quality of life for TBI survivors. To address and reduce TBI-related myths in therapeutic practices, one must have a basic awareness of these components[9]. As of now, several particular myths and misconceptions regarding TBI medical professionals such as physicians, nurses, and physiotherapists were not previously documented in India. The nation's overburdened healthcare system was further strained by health care professionals' ignorance and assumptions. Since medical personnel are frequently the initial point of contact among healthcare professionals. It is necessarily for them to be clear about the myths regarding TBI where they have to work with limited resources like India. This would enchance care and rehabilitation of traumatic brain injury patients

2. Method

At the Teerthanker Mahaveer Hospital and Research Centre in Moradabad, we employed a cross-sectional study design. For the study, a convenience sample of 120 healthcare professionals (physicians, nurses, and physiotherapists) were employed. Participants in the study were gathered from September 2023 to December 2023. Make sure that healthcare workers get adequate exposure to TBI.

3. Study Instrument

A 40-item self-report test called the CM-TBI is used to measure one's understanding of TBIs. Of the 40 items in this measure, 24 were created by Gouvier *et al.*[8], and the remaining 16 were derived from the primary author of Pappadis *et al.*'s clinical expertise[10].

4. Data Collection

After obtaining the approval, a forty-item self-report questionnaire intended to gauge participants' knowledge about TBI, its effects, and recovery was given to them to read and complete. For each item, participants had to select the true or false response. For each participant, the entire process took less than an hour.

5. Data Analysis

The Statistical Package for Social Sciences (SPSS) version 20 was utilised to analyse data from the questionnaire. The results of health care professionals (Physicians, nurses, and physiotherapists) with accurate and false opinions regarding brain injury consequences and recovery were determined by entering the questionnaire replies into the database.

4. Results

Among the 120 respondents to the survey, 40 were physicians, 40 were nurses, and 40 were physiotherapists. Figure 1 gives experiences into the view of experts regarding questions connected with Horrible Mind Injury (TBI counteraction and cerebrum harm). Across the reviewed test, different perspectives and convictions arise. The information shows that a critical piece of members engage in misguided judgments about safety belt utilization. A vital 28.33% of respondents accept that safety belts are pointless on the off chance that one can prepare themselves before an accident. Also, 37.5% feel that safety belt significance is dependent upon the span of the outing, with long excursions considered more basic than neighborhood driving. A significant 46.67% of members express the conviction that it is more secure to be

caught inside a disaster area than to be tossed clear during a mishap. This insight might mirror a misconception of the potential risks related to being restricted to a harmed vehicle. Remarkably, 85.83% recognize that a head injury can cause mind harm regardless of whether the individual is taken out, while 15% limit the meaning of cerebrum harm by declaring that a little cerebrum harm doesn't make any difference much. About 25% demonstrate that somebody has mind harm since they appear to be unique from individuals who don't have cerebrum harm,

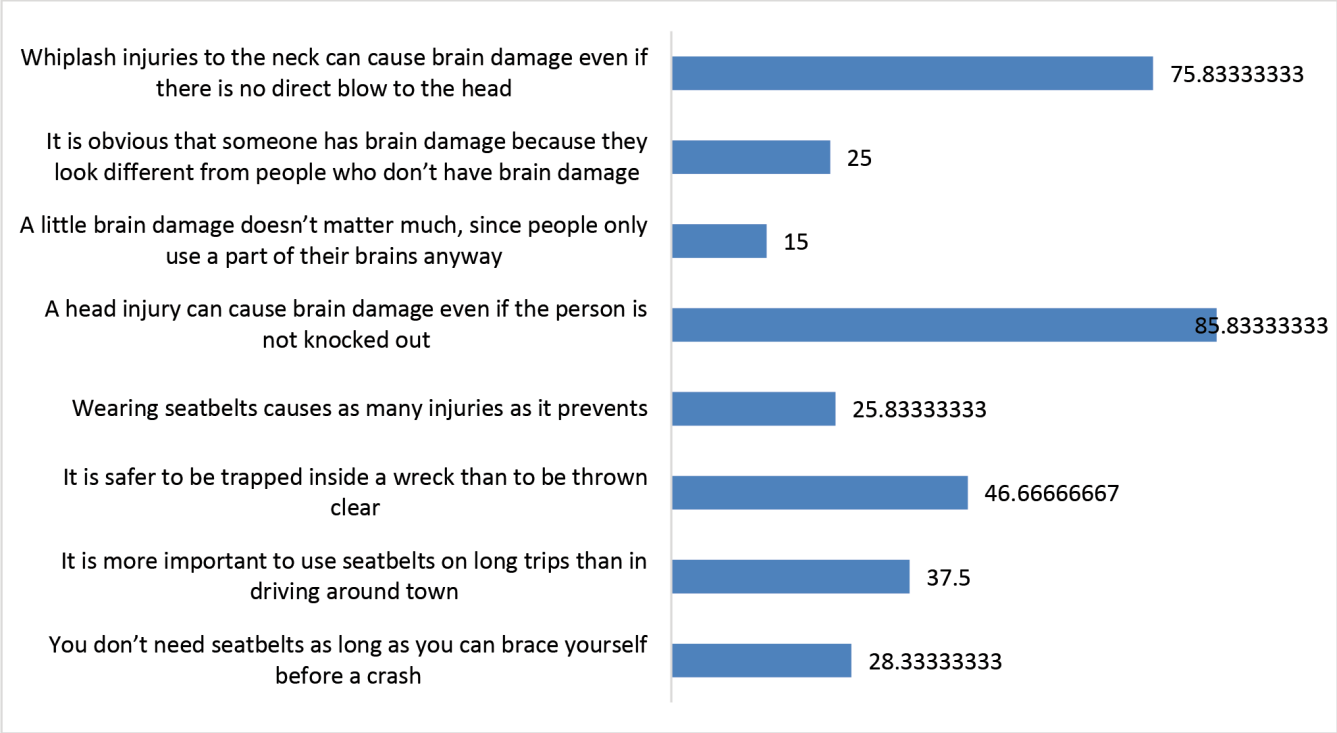

Figure 1. Percentage of positive responses to queries related to TBI prevention and brain damage.

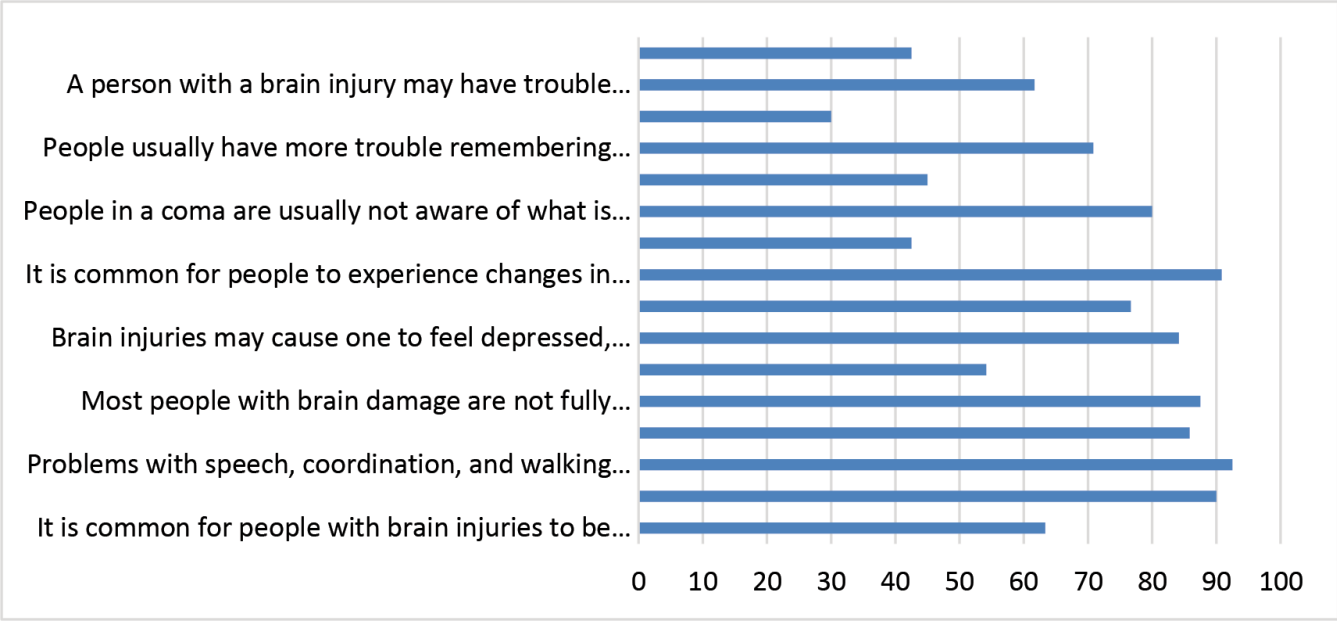

Figure 2. Percentage of positive responses of queries related to brain injury sequelae, unconsciousness and amnesia.

and 75.83% show whiplash wounds to the neck can cause mind harm regardless of whether there is no hard impact to the head.

Figure 2 shows inquiries connected with mind injury sequelae, obviousness, and amnesia gives significant experiences into the impression of medical care proficient (doctors, attendants and physiotherapists) on different parts of horrendous cerebrum wounds (TBIs). A huge 90.83% of respondents recognize that it is normal for people to encounter changes in conduct after supporting a mind injury. This high rate recommends overall mindfulness among the studied members of medical care proficient (doctors, attendants and physiotherapists) about the expected effect of TBIs on a singular's way of behaving. Concerning obviousness, 42.5% accept that when individuals are thumped oblivious, they will more often than not awaken rapidly with no enduring impacts. This point of view features a moderately hopeful view regarding the results of obviousness following a physical issue. About 80% of members perceive that people in a trance-like state are typically not mindful of their environmental factors. Besides, 45% accept that even following half a month in a trance-like state, people awakening would perceive and address others immediately. These reactions exhibit differing levels of mindfulness concerning the encounters of people in lethargic states. As far as memory-related questions, 70.83% of members recognize that individuals as a rule experience more difficulty recollecting occasions that happen after a physical issue than reviewing things from previously. Moreover, 61.67% perceive that an individual with a mind injury might battle to recall occasions before the injury however ordinarily doesn't experience challenges learning new things. This recommends a nuanced comprehension of memory challenges related to TBIs. An eminent 42.5% of respondents accept that people with cerebrum wounds can fail to remember what their identity is and not remember others but rather stay ordinary from every other perspective. This discernment features an acknowledgement of the potential for character and acknowledgement issues among those with mind wounds.

Figure 3 assesses inquiries concerning questions connected with recuperation and recovery and gives significant bits of knowledge into the view of medical services proficient (doctors, attendants and physiotherapists) in regards to the most common way of recuperating from horrendous cerebrum wounds (TBIs) and the objectives of restoration. The reactions feature a scope of convictions and understandings inside the tested populace. An eminent finding is that 28.33% of respondents accept that recuperation from a mind injury is ordinarily finished in around 5 months. In any case, a differentiating point of view is obvious, with 47.5% showing the conviction that total recuperation from an extreme cerebrum injury is beyond the realm of possibilities, no matter what the singular's assurance. There is a hopeful viewpoint reflected in the information,

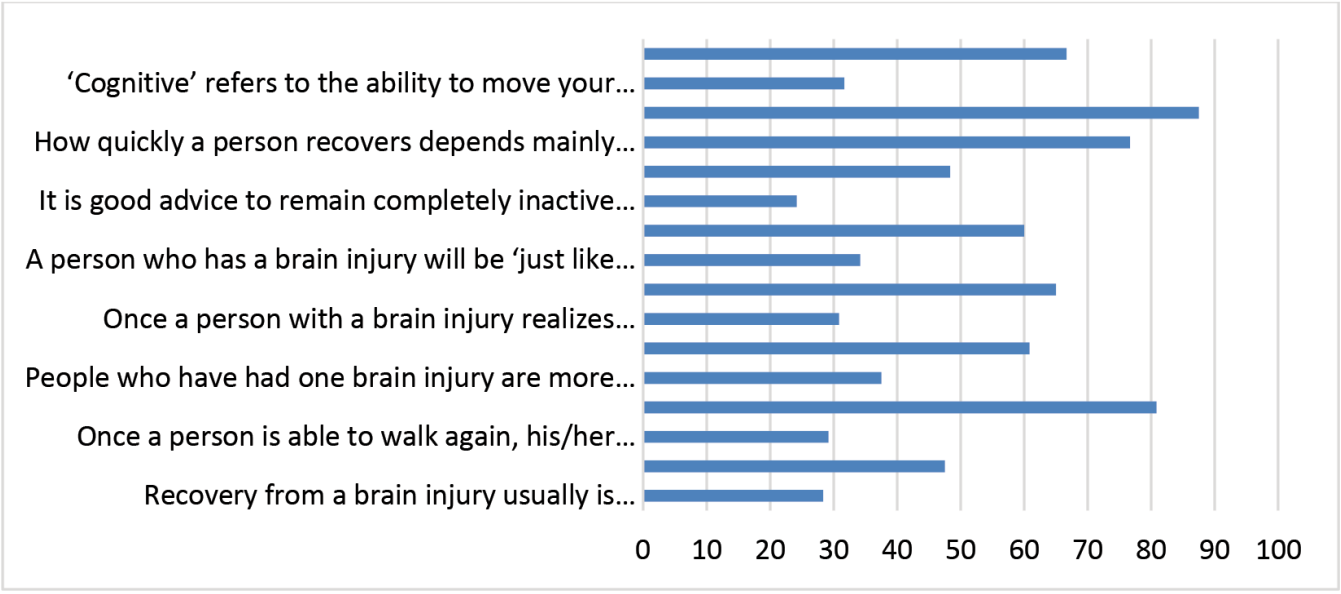

Figure 3. Percentage of positive responses of queries related to recoveries and rehabilitation.

with 29.17% of members imagining that once an individual can walk once more, their mind is completely recuperated. In any case, a more nuanced understanding is obvious in the affirmation by 80.83% that sluggish recuperation might proceed even one year after the injury. Concerning the probability of resulting wounds, 37.5% accept that individuals who have had one mind injury are bound to encounter a subsequent one. Moreover, 60.83% think that it is fundamental for a person to get through a lot of actual agony to recuperate from a cerebrum injury. Discernments about mental perspectives are reflected in the reactions, with 87.5% perceiving that the term 'mental' alludes to thinking cycles like memory, consideration, and learning. In any case, to a more modest extent, 31.67%, comprehends that 'mental' likewise alludes to the capacity to move one's body. The essential objective of cerebrum injury recovery is one more area of interest, with 66.67% of respondents showing that the essential objective is to increment actual capacities like strolling. This proposes a possible misinterpretation of the complete idea of restoration, which likewise incorporates mental and close-to-home perspectives.

Table 1. Statistical analysis of each query with that of the profession

Queries		Chi-Square	P-value
[A] Prevention			
1	You don't need seatbelts as long as you can brace yourself before a crash	17.319[a]	0.000
2	It is more important to use seatbelts on long trips than in driving around town	16.853[a]	0.000
3	It is safer to be trapped inside a wreck than to be thrown clear	2.076[a]	0.354
4	Wearing seatbelts causes as many injuries as it prevents	1.131[a]	0.568
[B] Brain Damage			
5	A head injury can cause brain damage even if the person is not knocked out	137[a]	0.934
6	A little brain damage doesn't matter much, since people only use a part of their brains anyway	8.235[a]	0.016
7	It is obvious that someone has brain damage because they look different from people who don't have brain damage	16.800[a]	0.000
8	Whiplash injuries to the neck can cause brain damage even if there is no direct blow to the head	.637[a]	0.727
[C] Brain Injury Sequelae			
9	It is common for people with brain injuries to be easily angered	2.225[a]	0.329
10	A person's personality may change after a brain injury	10.556[a]	0.005
11	Problems with speech, coordination, and walking can be caused by brain damage	5.045[a]	0.080
12	Problems with irritability and difficulties controlling anger are common in people who have had a brain injury	3.427[a]	0.180
13	Most people with brain damage are not fully aware of its effect on their behavior	9.600[a]	0.008
14	Brain injury patients usually show a good understanding of their problems because they experience them every day	3.290[a]	0.193
15	Brain injuries may cause one to feel depressed, sad, and hopeless	6.503[a]	0.039
16	Drinking alcohol may affect a person differently after a brain injury	1.770[a]	0.413
17	It is common for people to experience changes in behavior after a brain injury	8.607[a]	0.014
[D] Unconsciousness			
18	When people are knocked unconscious, most wake up quickly with no lasting effects	7.980[a]	0.019
19	People in a coma are usually not aware of what is happening around them	3.750[a]	0.153
20	Even after several weeks in a coma, when people wake up, most recognize and speak to others right away	5.657[a]	0.059

[E] Amnesia			
21	People usually have more trouble remembering things that happen after an injury than remembering things from before	.565[a]	0.754
22	Sometimes a second blow to the head can help a person remember things that were forgotten	5.000[a]	0.082
23	A person with a brain injury may have trouble remembering events that happened before the injury, but usually does not have trouble learning new things	1.763[a]	0.414
24	People with brain injury can forget who they are and not recognize others but be normal in every other way	5.729[a]	0.057
[F] Recovery			
25	Recovery from a brain injury usually is complete in about 5 months	8.454[a]	0.015
26	Complete recovery from a severe brain injury is not possible, no matter how badlythe person wants to recover	1.404[a]	0.496
27	Once a person can walk again, his/her brain is almost fully recovered	2.501[a]	0.286
28	Slow recovery may continue even 1 year after injury	.108[a]	0.948
39	People who have had one brain injury are more likely to have a second one	1.493[a]	0.474
30	A person must go through a lot of physical pain to recover from a brain injury	.280[a]	0.869
31	Once a person with a brain injury realizes where they are, they will always be aware of this	5.939[a]	0.051
32	A person who has recovered from a head injury is less able to withstand a second blow to the head	1.538[a]	0.463
33	A person who has a brain injury will be 'just like new' in several months	25.860[a]	0.000
34	Asking persons who have had a brain injury about their progress is the most accurate, informative way to find out how they have progressed	3.958[a]	0.138
35	It is good advice to remain completely inactive during recovery from a brain injury	8.276[a]	0.016
36	Once a person recovering from a brain injury feels 'back to normal,' the recovery process is complete	5.273[a]	0.072
37	How quickly a person recovers depends mainly on how hard he or she works at recovering	.652[a]	0.722
[G] Rehabilitation			
38	'Cognitive' refers to thinking processes such as memory, attention and learning	8.686[a]	0.013
39	'Cognitive' refers to the ability to move your body	6.085[a]	0.048
40	The primary goal of brain injury rehabilitation is to increase physical abilities such aswalking"	2.775[a]	0.250

Table 1 presents the consequences of a chi-square examination inspecting the reactions to different inquiries connected with horrible cerebrum wounds (TBIs) across various callings - doctors, medical caretakers, and physiotherapists. The chi-square measurement, levels of opportunity (df), and p-values are accommodated to each question, demonstrating the meaning of contrasts in reactions among the medical services proficient (doctors, attendants and physiotherapists) gatherings. A few questions show measurably huge contrasts in reactions among the medical care proficient (doctors, medical attendants and physiotherapists). For example, on the conviction that recuperation from a mind injury is finished in around 5 months, there is a huge contrast among the gatherings (Chi-Square = 8.454, df = 2, p = 0.015). Essentially, the conviction that an individual who has a mind injury 'very much like new' in a while additionally shows tremendous contrasts among the medical services proficient (doctors, medical attendants and physiotherapist) gatherings (Chi-Square = 25.860, df = 2, p = 0.000). Notably, a few questions, for example, whether wearing safety belts causes; however many wounds it forestalls or on the other hand assuming it is more secure to be caught inside a disaster area than to be tossed clear, don't show huge contrasts in reactions among the medical care proficient (doctors, medical caretakers and physiotherapist). Table 2 offers an examination of the level of misinterpretations among

Table 2. Comparison of the percentage of misconceptions among physicians, nurses, and physiotherapists

Parameter	Physicians	Nurse	Physiotherapist
Prevention	31.25	51.25	26.25
Brain damage	15.625	29.375	25.625
Brain injury sequelae	17.77	27.5	15.83
Unconsciousness	39.16	23.33	45
Amnesia	33.43	39.375	25.625
Recovery	40.9	50.45	39.54
Rehabilitation	40.83	39.16	30.83

doctors, medical caretakers, and physiotherapists across different boundaries critical to patient consideration.

5. Discussion

Several research has looked into common misunderstandings concerning TBIs held by the public and by relatives of TBI victims[11]. Hux *et al.* concentrated on the public's knowledge and misconceptions regarding brain injury and determined if efforts to dispel these myths had been successful[12]. Hux k et *al.* compared the degree of misconceptions between pre-nursing and nursing major students in their study. First- and second-year nursing students made up the pre-nursing participants, while third-, fourth-, and fifth-year nursing students were the nursing majors. In contrast to pre-nursing students, nursing major students were shown to have fewer misconceptions[13]. To treat patients and their families with the appropriate care, healthcare personnel must be well-versed in TBIs and their impacts. The current study discovered significant misconceptions regarding TBIs among healthcare professionals, including Physicians, nurses, and physiotherapists. Misconceptions about TBIs are pervasive and are even supported by evidence from the medical sector. To the best of our knowledge, the purpose of this study is to record common misconceptions about TBI among medical professionals, including Physicians, nurses, and physiotherapists. Examining the category of prevention, nurses demonstrate the highest mean misconception percentage at 51.25%, followed by doctors at 31.25% and physiotherapists at 26.25%. This suggests potential disparities in understanding preventive measures among healthcare professionals. Moving to brain damage, nurses exhibit the highest mean misconception percentage at 29.375%, followed by Physicians at 15.625% and physiotherapists at 25.625%. These findings highlight the need for targeted education regarding the impact and management of brain injuries, particularly among nurses.

Regarding brain injury sequelae, physicians and nurses display higher mean misconception percentages compared to physiotherapists. Nurses show the highest mean misconception at 27.5%, indicating potential gaps in their understanding of the long-term effects of brain injuries. In terms of unconsciousness, physicians exhibit the highest misconception percentage at 39.16%, followed by physiotherapists at 45% and nurses at 23.33%. This indicates varying levels of understanding among healthcare professionals regarding the management of unconscious patients. Moving on to amnesia, physicians demonstrate the highest mean misconception at 33.4375%, followed by nurses at 39.375% and physiotherapists at 25.625%. These findings suggest the need for improved education regarding the understanding and management of amnesia across all healthcare professions. Finally, in the category of recovery and rehabilitation, nurses consistently demonstrate higher mean misconception percentages compared to Physicians and physiotherapists. This highlights potential areas for enhanced education and interdisciplinary collaboration to optimize patient outcomes in the rehabilitation process. Moving to amnesia, recovery, and rehabilitation, nurses and Physicians again demonstrate relatively high levels of misconception, with nurses showing slightly higher percentages in some cases. Physiotherapists consistently exhibit lower levels of misunderstanding across these parameters, indicating a potentially more comprehensive understanding of these aspects of patient care. Overall, these findings highlight the variability in understanding among healthcare professionals and emphasize the importance of ongoing education and interdisciplinary collaboration. Addressing misconceptions in key areas of patient care can lead to improved outcomes and enhance the quality of healthcare

delivery. Additionally, these insights underscore the need for tailored educational interventions to bridge knowledge gaps and foster a more unified approach to patient care across healthcare professions. We are aware of the limitations of our research. The current study had limitations in that the study needs to be repeated using a more representative sample, samples that span a larger age range, and samples that are stratified by gender, ethnicity, socioeconomic situation, and level of education.

6. Conclusion

The data reveals a mix of optimistic and nuanced perspectives among professionals regarding the recovery process and rehabilitation goals for individuals with severe traumatic brain injuries. Addressing misconceptions and providing a more comprehensive understanding of the recovery journey and rehabilitation objectives may be crucial in enhancing the knowledge. The chi-square analysis indicates varying perspectives among Physicians, nurses, and physiotherapists regarding specific beliefs related to TBI prevention, brain damage, recovery, and rehabilitation. The results suggest that professional background may influence perceptions, emphasizing the importance of tailored educational interventions within each professional group to address potential misconceptions and enhance knowledge about traumatic brain injuries. Interdisciplinary communication among healthcare professionals to address misconceptions and ensure comprehensive patient care across various medical parameters.

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