



## Psychological Adjustment Strategies among Persons with Spinal Cord Injury at the Tamale Metropolis, Ghana

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### Authors' contributions

This work was carried out in collaboration between all authors. All authors read and approved the final manuscript.

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### ABSTRACT

**Introduction:** Spinal cord injury (SCI) is a devastating condition that creates unique challenges to affected persons and family because of its inherent physical and psychosocial consequences. In spite of these consequences, little efforts have been made by African researchers to explore the psychological adjustment strategies of persons with SCI in Africa, and the majority of studies in this regard were carried out in developed countries such as the United States of America and the United Kingdom. The purpose of this study was to determine the psychological adjustment strategies of persons with SCI in the Tamale Metropolis, Ghana.

**Methods:** The study employed a descriptive phenomenological design. Purposive sampling technique was used to recruit thirteen participants through the Neurosurgical Unit of the Tamale

Teaching Hospital. Data was gathered through semi-structured interviews, and analysed using content analysis.

**Results:** The four main psychological adjustment strategies that were identified from our data were 'Religious Beliefs', 'Hope', 'Information Seeking' and 'Acceptance'.

**Conclusion:** Although persons with SCI employ a myriad of psychological adjustment strategies such as religious beliefs, hope, information seeking and acceptance, the most important psychological adjustment strategy, according to the findings of the present study is religious beliefs, as it plays a pivotal role in assisting persons with SCI to adjust to the ramifications of the injury.

*Keywords: Spinal cord injuries; religion; adjustment; hope; information seeking behaviour; functioning.*

## 1. INTRODUCTION

Spinal cord injury (SCI) is a devastating condition that affects the biopsychosocial health of the affected individuals [1,2,3,4,5]. Globally, about 40 to 80 cases per million population are reported each year for both traumatic and non-traumatic SCI [6]. While epidemiological data on SCIs, are well documented in countries across Europe, Australia and America [7,8], statistical data on the incidence and prevalence of SCI in Africa is not readily available because, just a few countries in the continent have a spinal registry system [6]. In Sub-Saharan West Africa for instance, only Nigeria and Sierra Leone are reported to have published epidemiological data on SCI, with incidence rates of 15 per million population and 8 per million population respectively [8,9]. Again, the Sub-Saharan West African Region records low incidence rates of SCI annually as compared to other parts of the continent, as a result of lack of spinal registry systems across countries in the region and high mortality rates during patient retrieval by untrained first respondents [6,8]. Ghana like many countries in the Sub-Saharan West Africa region lacks a spinal registry system. However, records available at the Neurosurgical Unit of the Tamale Teaching Hospital, which serves as the referral centre for SCIs at the research setting indicate that, about 295 cases of SCI were admitted between 2010 and 2014, with a total of 35 deaths. This number represents approximately 25.3% of total admissions in the unit within that period. In addition, the most prevalent cause of SCI in Ghana is road traffic accident (RTA), accounting for about 70.3% of all occurrences of the disease [10].

The world Health Organization [6] asserts that improvements in clinical care and rehabilitation services have led to an increase in the life expectancy of persons with SCI. This implies that persons with SCI will live with the disability for longer periods of time, giving rise to new

experiences that can negatively affect their quality of life [6]. Again, the occurrence of a SCI creates unique challenges to affected persons because of its inherent physical and psychosocial consequences [7,8]. Studies have reported that persons with SCI are often faced with physical symptoms ranging from chronic pain and immobility secondary to paralysis, to pressure ulcers, and urinary incontinence among others [7,9,10,11]. These physical symptoms often give rise to psychological dysfunction such as low self-esteem [12], depression and anxiety [3,13]. In addition to the physical and psychological dysfunction, persons with SCI are also faced with a significant decline in participation in social activities, marital and sexual relationships problems as well as financial difficulties [5,6,14,15]. More so, it has been recognised that persons with SCI at the Tamale Metropolis are faced with challenges ranging from high cost of medical care and poor quality health care as a result of the negative attitude of health care professionals [16]. All these challenges adversely affect the functioning and quality of life of affected persons.

Meanwhile, it has been recognised that, the use of appropriate psychological adjustment strategies is the key factor in determining successful adjustment to SCI [17,18], and for effective adjustment to SCI to take place, persons living with the injury need to reassess and redefine their aspirations, objectives and meanings of life [19,20]. The psychological adjustment has been defined as any effort, either intentionally or unintentionally that is intended to prevent, eliminate, or tolerate the effects of stressors [16]. To this end, persons living with SCI need to cope with the changes in their physical and psychosocial health in order to maintain optimal functioning and to lead a meaningful life. There has been extensive work on the psychological adjustment and coping strategies among persons with SCI [18,20,21,22,23]. Most of these studies, however,

were conducted in developed countries such as America, the United Kingdom and Sweden among others. Little efforts have been made by African researchers in exploring the psychological adjustment mechanisms of persons living with SCI and there is paucity of studies in that regard in the African continent. Again, like many other African countries, little is known about the psychological adjustment strategies of persons with SCI in Ghana. The purpose of this study, therefore, was to explore the psychological adjustment strategies of persons with SCI in the Tamale Metropolis, Ghana. It was the researchers' belief that, gaining an understanding of the psychological adjustment strategies of persons with SCI will help improve the quality of health care for persons with this condition and also add to the existing body of knowledge in neuroscience.

## 2. METHODS AND MATERIALS

### 2.1 Study Design

The present study was a part of a descriptive phenomenological Master of Philosophy (Nursing) dissertation for the first author to explore the experiences of persons living with SCI in Ghana. The main purpose of a phenomenological study is to describe the lived experiences of several individuals of a concept or phenomenon [24]. Descriptive phenomenology involves the researchers setting aside all preconceived biases to see phenomena through unclouded lenses, and allowing the true meaning of phenomena to naturally emerge from the perspectives of the participants [25]. To explore the psychological adjustment strategies of persons with SCI, descriptive phenomenology was, therefore, the most appropriate design for the study.

### 2.2 Study Setting

The study was conducted in the Tamale Metropolis which is the largest city in the three northern regions of Ghana and the third largest metropolis in the country. The Metropolis is one of the 26 districts in the Northern Region. It is located in the central part of the Region and shares boundaries with the Sagnarigu District to the west and north, Mion District to the east, East Gonja to the south and Central Gonja to the south-west.

It has a population of 233,252 representing 9.4 percent of the region's population according to

the 2010 Population and Housing Census. Males constitute 49.7 percent and females represent 50.3 percent. In addition, the population of the metropolis is youthful with nearly 36.4% of the population is below the age of 15 years. Of the population 11 years and above, 60.1 percent are literates and 39.9 percent are nonliterates [26]. Unlike the southern part of Ghana where cars and minibuses called "trotro" are the major means of transport, the major means of transport for residents in the Tamale metropolis is with motor bicycles. This has led to high prevalence of cases of SCI according to anecdotal evidence at the Tamale Teaching Hospital.

### 2.3 Sample and Sampling Procedure

Purposive sampling technique was the sampling method used to select the sample for the study. Thirteen participants who had been diagnosed with a SCI at the Tamale Teaching Hospital-Ghana participated in the study. The sampling continued until data saturation was achieved. Saturation in qualitative research is achieved when new emerging themes are not forthcoming [27]. Participants were given fliers that contained the purpose of the study with the help of nurses in the neurological unit of the hospital. Participants who met the inclusion criteria of; having a SCI, being eighteen years of age or over and ability to communicate in English or Dagbani (a local dialect) were contacted by the first author and the purpose of the study was explained to them. They were subsequently recruited into the study after obtaining an informed consent.

### 2.4 Data Collection Methods and Procedure

Data for the study were gathered mainly through face-to-face in-depth interviews. The interviews were conducted using an interview guide which was developed based on the objectives of the study. Some of the questions that were asked during the interviews were:

- Could you please share with me your experiences with SCI?
- Could you please explain the challenges you have been facing since your injury?
- Could you please share with me how you have been able to adapt to the challenges that come with the injury?"
- What has kept you going in spite of all that you have been through?

The participants were contacted a few days before the actual data collection day to allow them enough time to consider their participation. The interviews were conducted at private locations based on participants' convenience and preferences. The interviews were recorded in an audio-tape recorder with the permission of the participants. The interviews lasted for approximately 30 to 66 minutes depending on the tolerance of participants and their willingness to share their experiences of the phenomena. The researchers also took field notes of all non-verbal communications during the data collection process to ensure that every aspect of the data was captured, and also to help in the analysis.

## 2.5 Data Analysis

The interviews were analysed concurrently with data collection using content analysis [28]. The purpose of the content analysis is to describe the characteristics of the document's content by examining who says what, to whom, and with what effect [27, 29]. At the end of each interview, the first author manually transcribed verbatim, the audio-taped recording of the interview. The accuracy of the manual transcripts was checked by a colleague researcher who read the transcript and at the same time listened to the audio-taped recordings. For interviews that were conducted in the local dialect (Dagbani), the transcripts were translated into English by another person who speaks and writes Dagbani to ensure the accuracy of the translation. After all audio-recordings had been manually transcribed, the transcripts were printed and the data was then analysed using content analysis. Each printed transcript was read repeatedly to gain a sense of the whole and to become familiar with the content of the transcript. During the analysis, the researchers searched the transcript for similar ideas, thoughts and words and these made up the codes. Identified codes were written on the hard copies of the transcripts. Each transcript was handled in this same manner, and new codes that emerged during the process were added until all the transcripts were coded. Following the coding, all information belonging to a code were copied and pasted in separately labelled Microsoft word files in a computer. Subsequently, the coding framework and the relationships between the codes were analysed and similar codes grouped into sub-themes and main themes. The coding framework changed as the analysis process progressed, with similar themes and sub-themes grouped together by the research team.

## 2.6 Trustworthiness

The researchers employed a number of measures to ensure the validity of the findings of the study. To begin with, the researchers achieved transferability [30] in the study by giving a vivid description of the research setting and by employing a sample size large enough to yield data saturation. To achieve the credibility of the data, the researchers purposefully recruited participants that met the inclusion criteria and who could provide in-depth information on their experiences with SCI. Again, the first author spent sufficient time in the field to gain a fuller and deeper understanding of participants' experiences. Credibility was further enhanced in the study through member-checking [31]; Transcripts of the interview were taken back to the participants and explained to them in the local dialect for comments and verifications before conclusions were drawn from the data. In achieving dependability in the study, the researchers maintained an audit trail by giving a transparent and in-depth description of the research design, background of participants and the methods used in collecting and analysing the data. The first author also employed the services of his supervisors who were not involved in the data collection to examine and make comments on the processes and findings of the study. The purpose was to evaluate the accuracy and assess whether or not the findings, interpretations and conclusions were actually supported by the data. To address any conflict of interest, the lead researcher reflected on his own biases and prejudices and bracketed and controlled them before data was collected.

## 2.7 Ethical Considerations

Approval for the study was obtained from the Institutional Review Board (IRB) of the Noguchi Memorial Institute for Medical Research, University of Ghana, with IRB number 00001276 and the research committee of the Tamale Teaching Hospital (TTH/R&D/SR/16/190). In addition, the purpose, objectives and any potential benefits and risks for participating in the study were explained to participants in the local dialect (Dagbani) or English a few days prior to data collection. This allowed participants enough time to consider their participation. Informed consent was obtained from each participant that met the inclusion criteria and agreed to take part in the study. Participants were also informed that they could decline to participate or withdraw from

the study even after they had signed the consent form without any consequences. The permission to record the interviews was sought from each participant who agreed to participate in the study. Data from the study were kept under lock and in the first author's office and only the researchers had access to the data. To ensure confidentiality and anonymity of the participants, the researchers replaced the real identities of all the participants with pseudonyms in reporting the findings of the study.

### 3. RESULTS

#### 3.1 Demographic Characteristics of Participants

The age range of participants was from 24 to 72 years with a mean of 50.5 years. Nine (69.2%) of the participants were males and four (30.8%) were females. Two of the participants were Christians (15.4%) and the rest were Muslims (84.6%); ten (77%) were married and three (23%) were single; eight (61.5%) had formal education and five (38.5%) had no formal education. Also, eight of the participants sustained their injury from road traffic accidents, three from tumour and two from unestablished aetiologies. Participants have had their injuries for about 6 months to 5 years (Table 1).

Table 1.

Demographic characteristic	Average	N (%)
<b>Age</b>	50.5	
< 40 years old		4 (30.8%)
≥ 40 years old		9 (69.2%)
<b>Sex</b>		
Male		9 (69.2)
Female		4 (30.8%)
<b>Religion</b>		
Muslim		11 (84.6%)
Christian		2 (15.4%)
<b>Marital status</b>		
Married		10 (77%)
Single		3 (23%)
<b>Level of education</b>		
Educated		8 (61.5%)
No Formal Education		5 (38.5%)
<b>Duration of injury</b>		
< 2 years		3 (23%)
≥ 2 years		10 (77%)

The four main psychological adjustment strategies that were identified from our data were

'Religious Beliefs', 'Hope', 'Information Seeking' and 'Acceptance'.

#### 3.2 Religious Beliefs

Religious beliefs were identified as an important adjustment strategy used by the majority of participants of our study in adjusting to the consequences of their injuries. The majority of the participants attributed the injury they sustained to a test on their faith from God, while a few others believed that, the injury sustained was a punishment from God, for sins they believed to have committed in the past. Some of the participants also drew inspirations from verses in the Quran by making inferences to Quranic quotations. The participants added that since it is Allah that gave them the injury, they had to bear the consequences. Some of the participants expressed their views and experiences are as follows:

*"There is this Quranic quotation that says "Allah does not burden His servant more than what he/she can bear. So because of this Quranic verse, anything that comes my way, I say it's from Allah. Allah knew very well that I could bear the consequences of the injury and that is why He has given it to me. So I leave everything to Him" (Adams)*

Another participant believed that, her condition is God's way of putting her faith to test. She narrated:

*"There is always a saying that, the one that God loves is the one He tries to see his faith. So when it came to that point, even though the cost and the suffering were too much, I said to myself that no, this could be God's way of putting my faith to test. So I prayed to that same God to see me through and that is what has kept me going". (Mariam)*

Although the majority of participants attributed the condition to divine providence, one of the participants saw his injury as punishment from God for the sins he believed to have committed in the past. He commented:

*"I don't blame anyone for my accident. It was just my turn, because as a true Muslim, whatever happens to me, I leave it to God. I only believed that, maybe I had sinned and God wanted to punish me for the sins I have committed by giving me the accident." (Alhassan)*

### 3.3 Hope

Hope was yet another psychological adjustment strategy that was employed by participants of our study in adjusting to the consequences of their injuries. The majority of the participants were hopeful of recovery, regardless of the severity of their physical impairment after the injury. Some of the participants became hopeful from the fact that they were still alive and had noticed an improvement in their condition. A few other participants also verbalised that they became hopeful after seeing an improvement in other patients with the same conditions in the ward. The researchers observed that, participants that employed religious beliefs as a coping mechanism also expressed higher hopes for recovery than other participants.

Wumbei was thankful for his life and hoped for recovery one day. He explained:

*"All that happened is part of human life. But as long as there is life, I would not lose hope. The white man tells us never lose hope until the bones are rotten. So it is not easy but that is what keeps me going; that I know one day I would be fine."*

Abena had also seen an improvement in her condition and hoped to gain full recovery with time. She explained:

*"I get inspired by the fact that I can now do things I couldn't do when I first came here. At first, I couldn't feel any sensation on my legs but now I can feel it when you touch my legs. So with that, I know that little by little I would be fine."*

Zack also got inspired after noticing an improvement in the condition of others with a similar situation in the ward. He narrated:

*"There were others in the ward my condition was far better than and after sometime they begun to walk. So, there I realised that everybody and the destiny, and I know that, my time for recovery would come. It may take time but I know I would recover from this someday."*

### 3.4 Information Seeking

Another adjustment strategy that was employed by participants of our study was 'information

Seeking'. Majority of the participants were not given adequate education on the nature of their injury while on admission at the hospital. This compelled some of the participants to seek for information about SCI from friends who were health personnel, and from the internet. The participants verbalised that, the information they received from friends who were health personnel and/or from the internet assisted them to understand the 'dos and don'ts' of their injury and that helped them in their adjustment to the injury. This is supported in the following quotations:

*"Well, to be frank, I wasn't educated thoroughly on what the injury was all about. But I realised that, there was something they were hiding from me. And out of that fear, and because no one was willing to talk to me, I started looking for information about the condition on the internet. And that really helped a lot because I had lots of information about the injury; what I needed to do and what the injury is all about. (Abena)*

Another participant had this to say:

*"I got to know much about the condition through a friend of mine who is a nurse. He came on a visit and explained everything to me and made me to understand that, healing may take some time and that I needed to be patient. That was where I got relieved a bit because I was very much afraid before". (Gariba).*

The participants further reported that, reading about the injury and its consequences on the internet assisted them in accepting their situation. This is what one of the participants had to say in sharing his experience:

*"I have been reading about how people with the condition can make a change in society and it tells me that, you must not necessarily be an abled person to that. So, you can make a change even in a wheelchair, provided you have the courage and the support. For me, that has been my motivation". (Adam).*

### 3.5 Acceptance

Some of the participants stated that, they had to accept the injury and learn to live with the consequences because they had no control over the situation. A few other participants accepted

the injury after learning more about the condition from friends and from the internet.

Thirty one year old Adams had to come to terms with his situation after all attempts to regain movement and control of his legs proved futile. He narrated:

*"Initially, I was always trying to raise my legs and trying to see if I could sit up or walk. But as the time went by, I got to realise that was not possible and that, I just had to learn to live with it. What can I do?"*

He continued to say:

*".....and since I came to terms there is little I can do about the situation, I have been asking myself if there is something I could still give to society. And I realised that there is still something in me that I am denying the society of. So I want to go out there and see whether I can make a change, because you don't know what you can do even in wheelchair until you try". (Adam)*

Gariba had the following to share:

*"Frankly speaking, it was hard at the beginning. You know, you wake up healthy and all of sudden this? But what I think really has been helpful is the words of encouragement from my friends and what I have personally come across in my reading about the condition. I realised all was not lost after reading about what one can do even with a SCI"*

#### 4. DISCUSSION

To be able to adjust to the debilitating nature of SCI and to maintain optimal functioning after the injury, the participants of our study employed a number of strategies. These strategies, according to the data generated from the participants were "Religious Beliefs", "Hope", "Information Seeking" and "Acceptance" respectively. Religious beliefs were identified as the most important psychological adjustment strategy that was employed by the majority of participants in the present study, for dealing with the consequences of the injury. Some of the participants attributed the injury they sustained to a test on their faith by God while others saw the injury as 'punishment' from God for sins they believed to have committed in the past. A few other participants drew inspiration from Quranic

quotations where Allah states that "God does not burden His servant more than what he/she can bear". Similarly, other studies have cited religious beliefs as an important coping strategy for adjusting to the stressful experiences of SCI [20, 32]. Anderson et al. [33] assessed spirituality and life satisfaction among adults with paediatric-onset SCI in the United States. Over half of the participants in the study endorsed religion as very important to their lives and also employed spiritual coping as a strategy for dealing with the condition [32]. In another study, Babamohamadi et al. [20] explored the coping strategies of eighteen Iranian Muslims with SCI. Participants in that study identified religious beliefs as one of the most important coping strategies that helped them in refining their thoughts, focusing on the problem and taking decisions [20]. It is clear from the above discourse that, the use of religious beliefs and spirituality as psychological adjustment strategies are common among persons with SCI and consistent across cultural boundaries. It was, however, not surprising to have observed that, most of the participants in the present study cited religious beliefs as an adjustment strategy. This is because Ghanaians are notably religious and relate every aspect of their lives to religion. The population of Ghana are predominantly Christians (71.2%), Muslims (17.6%) and traditionalists (5.3%) [34]. Belief in the supernatural powers of God as a supreme being, in control of human life is phenomenal in the country. Again, it is known that the Ghanaian culture is heavily underpinned by religion, be it Christianity, Islamic or traditional religion. Thus political, social and even educational activities in the country are all infiltrated with religion.

Hope was yet another psychological adjustment strategy that was employed by participants of the present study. The majority of participants in the present study were hopeful for recovery from the injury regardless of the severity of their illness or the magnitude of their physical impairment. Some of the participants became hopeful after noticing the improvement in their condition while others got hopeful after witnessing an improvement in the conditions of other patients with similar conditions on the ward. Similar to our finding, previous studies have identified hope as a critical psychological variable for the well-being and quality of life of persons with SCI [35,36,37,38,39]. Lohne and Severinson [38] assessed the experience of hope among persons with SCI after a year of injury. Similar to the findings of our study, participants in that study

identified hope as the psychological factor necessary for recovery [40]. Again, previous narrative reviews have reported that persons with paralytic SCI continue to have hope of walking again, even when there is no evidence of the possibility of walking after their SCI [36,34]. Future longitudinal studies would help shed light on the impact of hope as a coping strategy, on the recovery of persons with SCI.

In their quest to understand the multifaceted nature of SCI, with the aim of adjusting positively to its consequences, the majority of the participants of our study sought for information about SCI from sources rather than from the health staff at Tamale Teaching Hospital. This is because, majority of the participants were not given adequate health education while on admission at the hospital. Some of the participants sought for information about SCI from the internet, while others received health education from friends who are health professionals. Previous studies have also identified the internet as a relatively accessible source of information, that is patronised by the majority of persons with SCI, but cited concerns about the quality of information found there [41, 42,43,44]. According to our participants, the information they received from the internet and friends assisted in their adjustment to the ramifications of their injury as it helped them to understand the “dos and don’ts” of their injury and how to live with it. To the best of our knowledge, this was the first study on psychological adjustment in SCI that identified information-seeking as a coping strategy for persons with SCI, as the majority of previous literature cited other coping strategies such as emotional support, humour, positive reframing, religion, and other concepts, as the coping mechanisms for persons with SCI [20,22,23,45]. Differences in demographic characteristics of participants and sociocultural differences between the present study and other past studies may account for the differences between our findings and that of others. Future comparative studies involving large transcultural samples would help shed more light in the coping strategies of persons with SCI across cultures.

Further to the above, the participants of our study also employed acceptance as a psychological mechanism in dealing with the consequences of their condition. The participants stated that, they had to accept the consequences of the injury

since there was nothing they could do about the situation. A few of the participants, however, accepted the injury after seeking information about the condition from the internet and from friends and who are health workers. It was therefore observed that, the majority of participants in the study who employed information-seeking as a coping strategy, also accepted their condition. In congruence with our findings, Soundy et al. [34] in a narrative review, also identified acceptance as a common coping strategy among persons with SCI. The researchers reported that, the importance of valuing what is left in life and being able to see a different future with modified hopes were identified by participants of most of studies reviewed as important and represented an ability to transcend suffering [34]. It is clear from the discussions that, spirituality plays a key role in assisting persons with SCI towards their adjustment to the condition. The Ministry of Health and other relevant stake holders in the health care delivery system should, therefore, promote the services of the hospital chaplain in the care of persons with SCI in order to meet the spiritual needs of these persons. There must also be proper health education by health staff for persons with SCI and their families to enable them to understand the multifaceted nature of SCI and aid in their adaption to the consequences of the injury.

## 5. LIMITATIONS OF THE STUDY

The main limitation of the study identified by the researchers was the representativeness of the sample. This is because, to ensure that rich and detailed data was obtained on the coping strategies of persons with SCI, the researchers employed a purposive sampling technique to recruit only participants who had a wealth of information to share on their experiences. As a result, the findings’ replicability is limited to groups that share the same characteristics as the sample of this study. Future longitudinal studies involving large samples would help shed more light on the coping strategies of persons with SCI over time.

## 6. CONCLUSION

Although persons with SCI in Ghana employ a number of psychological adjustment strategies such as religious beliefs, hope, information seeking and acceptance, in dealing with the consequences of the condition, the most important psychological adjustment strategy,



according to the findings of the present study is religious beliefs, as it plays a pivotal role in assisting persons with SCI to adjust to the ramifications of the injury.

## CONSENT

Informed consent was obtained from each participant that met the inclusion criteria and agreed to take part in the study.

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## COMPETING INTERESTS

Authors have declared that no competing interests exist.

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