Public Interest in Cervical Spine Topics Informs Educational Needs: 5,448 Survey Results

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ABSTRACT

Introduction: The prevalence of neck pain and cervical spine pathologies is skyrocketing, fueled by an aging population and younger generations affected by poor posture while using handheld devices. Many patients turn to the internet for medical information, but studies have shown that the available sources are often difficult for the general public to understand, resulting in knowledge gaps. Amidst this confusion, the specific cervical spine topics that captivate the public's attention remain unidentified.

Objective: Identify the specific cervical spine topics that are of greatest interest to the general public.

Methods: The National Spine Health Foundation (NSHF) conducted a survey using a questionnaire to determine the public's objectives for understanding the cervical spine. The survey consisted of six questions and was distributed electronically from August 31st, 2022, to September 16th, 2022. The survey link was made accessible on NSHF's website, social media platforms, and electronic newsletter. Proportions were utilized to analyze the survey results.

Results: The survey of 5,448 participants revealed that the majority were interested in learning about neck disorders, symptoms, and anatomy (36.5%, 27.2%, and 17%, respectively). Neck movement and anatomy were also of significant interest (38.1% and 24.5%, respectively). Respondents were most interested in learning about cervical myelopathy/cervical spinal stenosis and disc herniation/pinched nerves (27.9% and 27.7%, respectively), followed by other conditions. Most participants wanted to learn about neck pain, radiating arm pain/weakness/numbness, stiffness/poor range of motion, poor balance/hand coordination, and headaches. Massage/acupuncture was the most sought-after treatment option (28.2%), followed by other options. Respondents were interested in hybrid surgery (34.5%), followed by other surgical procedures.

Conclusion: The survey results unveiled a significant interest in diverse topics concerning the cervical spine, underscoring the necessity for accessible and comprehensible information. This emphasizes the importance of offering the public high-quality resources. Future studies should undertake an investigation into the effectiveness of educational initiatives in enhancing the public's understanding of cervical spine issues.

Keywords
Cervical Spine Topics, Neck pain and disorders.

Introduction

According to the Global Burden of Disease Study 2013, neck pain was ranked as the fourth highest cause of years lived with a disability [1]. Despite this significant number of individuals disabled by neck pain, many of whom rely on internet sources for information about their condition, studies have indicated that online spine patient education resources often have poor

readability, making comprehension difficult for a substantial portion of patients [2-8].

Patient education has become an essential component of the traditional patient care model, which encompasses evaluation, diagnosis, and treatment planning. Effective information-sharing between physicians and patients is crucial for shared decision-making and can positively impact outcomes [6,8,9]. Well-informed patients are empowered to actively participate in their treatment journey. Healthcare providers should educate cervical spine patients about non-surgical and surgical treatment options, including risks, benefits, and recovery times.

Preventing cervical spine disease is a vital aspect of spinal healthcare that requires education. Promoting healthy habits and lifestyle changes, such as regular exercise, avoiding nicotine, maintaining a healthy weight, adopting proper posture, and practicing ergonomics, can reduce the risk of developing cervical spine disease and experiencing symptoms. Education on the fundamentals of cervical spine health can engage asymptomatic individuals and the younger generation, who are undoubtedly impacted by handheld devices. However, it is essential to disseminate this information to the public for it to be truly beneficial.

The cervical spine is a complex structure that supports the head and enables movement while maintaining proper gaze. Spinal anatomy and disorders are diverse, involving multiple structures and individual contributing factors such as genetics, occupation, injuries, and general health habits. Similarly, patients can present with a wide range of symptoms that significantly affect their quality of life and daily activities. However, the manifestation of spinal diseases and their associated symptoms can vary greatly from person to person. The complexity of the subject matter, the variety of disorders and symptoms, the variability in presentation, and the lack of easily understandable educational materials contribute to numerous unanswered questions among the general population.

The level of public awareness regarding cervical spine-related topics has not been quantified, and the specific information sought by the public remains unknown. This study aims to identify areas of public interest in understanding the cervical spine, with the objective of closing knowledge gaps by creating educational content that is accessible and comprehensible to the public. By improving understanding of the causes and symptoms of cervical spine diseases, individuals will be better equipped to take preventive measures and seek appropriate treatment when necessary.

Methods

The study was conducted by the National Spine Health Foundation (NSHF), a patient centered non-profit organization committed to assisting individuals with spine-related conditions in navigating their treatment path through education, research, and advocacy. The primary mission of NSHF is to offer patients access to high-quality information pertaining to spinal disorders and available treatment options. In pursuit of this mission, NSHF designed and implemented a survey aimed at identifying knowledge gaps and determining the specific topics related to the cervical spine that the public considered a priority.

The survey was conducted using Intuit MailChimp survey software from August 31, 2022, to September 16, 2022, with recruitment efforts solely carried out electronically. Participants were provided with opportunities to access the survey through various channels: (1) a popup message displayed upon entering NSHF's official website during the survey period, (2) separate posts on NSHF's social media platforms (Instagram, Facebook, and Twitter) on September 2nd, 9th, and 12th, and (3) distribution of NSHF's Spine Spotlight e-newsletter to 8,973 subscribers on August 31st. It should be noted that the survey source was not captured due to a limitation of the survey software.

The survey consisted of six single-select multiple-choice questions and was conducted exclusively in English (Table 1). No personal identifiers or demographic information were collected to maintain the confidentiality of the participants. Consent was implied by clicking the link to the optional survey, and explicit consent was not obtained. Proportions were calculated using the survey software package, and an automated results report was generated.

Table 1: Respondents selected one answer for the following 6 questions:

1)	**I am most interested in learning about:**
a.	the anatomy and function of the neck
b.	disorders of the neck
c.	symptoms of the neck
d.	non-surgical treatments for the neck
e.	surgical treatments for the neck
2)	**I am most interested in learning more about the following anatomy and function of the neck:**
a.	anatomy
b.	neck movement
c.	arm strength and sensation
d.	balance and coordination
e.	posture
3)	**I am most interested in learning about the following neck disorders:**
a.	alignment/posture disorders
b.	degenerative disc disease
c.	disc herniation and pinched nerves
d.	cervical myelopathy/cervical spinal stenosis
e.	whiplash/strain/sports injuries
f.	fractures and other trauma
4)	**I am most interested in learning about the following neck symptoms:**
a.	neck pain
b.	stiffness/poor range of motion
c.	radiating arm pain/weakness/numbness
d.	poor balance and hand coordination
e.	headaches

5)	**I am most interested in learning about the following non-surgical treatments for the neck:**
a.	physical therapy/transcutaneous electrical nerve stimulation
b.	massage/acupuncture
c.	chiropractic therapy
d.	stretching/traction
e.	collar/bracing/ immobilization
f.	injections (joint, epidural, nerve blocks)
g.	medications
6)	**I am most interested in learning about the following surgical treatments for the neck:**
a.	arthroplasty/disc replacement
b.	fusion
c.	hybrid surgery (both disc replacement and fusion)
d.	decompression
e.	laminoplasty

Results

During the 17-day period, a total of 5,448 surveys were completed. In response to the first survey question regarding general topics of interest, the largest percentage of participants (36.5%, 1,988 out of 5,448) indicated a desire to learn about neck disorders. Other areas of interest, in descending order, included symptoms of the neck (27.2%, 1,480/5,448), anatomy and function of the neck (17%, 926/5,448), non-surgical treatments for the neck (13.8%, 753/5,448), and surgical treatments for the neck (5.5%, 301/5,448) (refer to Figure A).

Regarding the second inquiry concerning the anatomy and functions of the cervical spine, the highest proportion (38.1%, 2,075/5,448) expressed an interest in learning about neck movement. Additionally, there was interest in the anatomy of the neck (24.5%, 1,335/5,448), arm strength and sensation (22.5%, 1,227/5,448), balance and coordination (12.1%, 661/5,448), and posture (2.8%, 150/5,448) (refer to Figure B).

Addressing the third question regarding disorders related to the cervical spine, respondents showed the most interest in learning about cervical myelopathy/cervical spinal stenosis and disc herniation/pinched nerves (27.9%, 1,522/5,448 and 27.7%, 1,510/5,448, respectively). Other areas of interest included degenerative disc disease (20.3%, 1,107/5,448), alignment/posture disorders (12.7%, 694/5,448), whiplash/strain/sports injuries (8.9%, 487/5,448), and fractures and other traumas (2.3%, 128/5,448) (refer to Figure C).

In response to the fourth question regarding symptoms from the cervical spine, respondents expressed a desire to learn about neck pain (28.4%, 1,545/5,448), radiating arm pain/weakness/numbness (28%, 1,528/5,448), and stiffness/poor range of motion (25.8%, 1,406/5,448). Other areas of interest included poor balance and hand coordination (14.7%, 803/5,448) and headaches (3%, 166/5,448) (refer to Figure D).
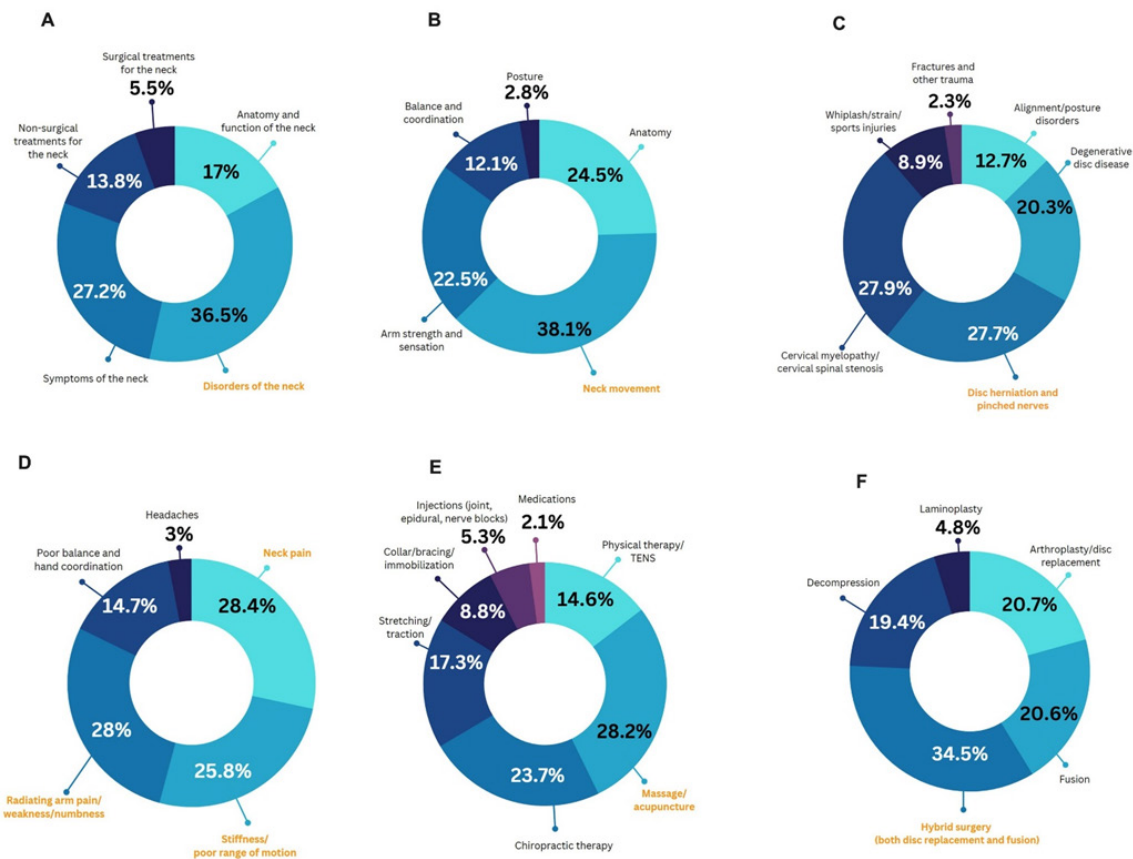
Figure 1: Illustrates the proportions derived from the responses obtained for Survey Questions 1-6.

Regarding the fifth inquiry regarding non-surgical treatments for the cervical spine, the majority (28.2%, 1,537/5,448) expressed their interest in acquiring further knowledge about massage/acupuncture. Other areas of interest included chiropractic therapy (23.7%, 1,291/5,448), stretching/traction (17.3%, 942/5,448), physical therapy/TENS (14.6%, 793/5,448), collars/braces/immobilization (8.8%, 480/5,448), injections (5.3%, 291/5,448), and medication (2.1%, 114/5,448) (refer to Figure E).

In response to the last question regarding surgical cervical spine treatments, the majority of respondents (34.5%, 1,878/5,448) expressed an interest in hybrid surgery. There was also interest in arthroplasty/disc replacement (20.7%, 1,128/5,448), fusion (20.6%, 1,121/5,448), decompression (19.4%, 1,058/5,448), and laminoplasty (4.8%, 263/5,448) (refer to Figure F).

Although no data on the referral source or demographics of the respondents were collected, demographic information of the NSHF social media followers during the survey period was analyzed. Among the NSHF Facebook followers (11,739 during the survey), the majority (68.9%) identified as female. The largest age group was the 65+ category, accounting for 23.8%, closely followed by the 55–64-year category at 20.4%. Male followers accounted for 30.3% of the total, while 0.7% of followers did not specify their gender. In contrast, on Instagram (3,088 followers during the survey), 22% of followers did not select their gender. Among those who specified, 39.4% were identified as female and 36.2% as male. The largest age group among Instagram followers was in the 18-24 range, comprising 31.4% of the total, followed by the 25-34 range at 28.9%. During the 17-day period that the survey was open, the NSHF website recorded a total of 10,288 visits from 8 different countries, with the majority originating from the United States (60.5%).

Discussion

Presently, patients possess the ability to access a diverse array of educational materials online, thereby enabling them to make informed choices and assert their independence. Multiple sources have demonstrated that the provision of precise and readily comprehensible online resources for patient education not only enhances patient involvement but also facilitates the establishment of a cooperative rapport between patients and physicians. Consequently, this engenders greater involvement in the process of shared decision-making [10]. Although the aforementioned information is widely acknowledged, studies indicate that the readability level of educational materials targeting spine patients surpasses the recommended reading level set by national medical organizations [3,5]. The objectives of this survey were to pinpoint areas of public interest regarding the cervical spine and address the educational content requirements concerning cervical spine health, with the aim of bridging existing knowledge gaps. By attaining even a fundamental level of understanding, individuals will be better prepared to undertake preventive measures and seek appropriate treatment when necessary.

The results of the cervical spine survey indicate a strong public interest in expanding their knowledge about this topic. The interests expressed cover a wide range, from basic subjects such as neck pain and massage to more advanced topics such as anatomy, functions, cervical myelopathy, and hybrid surgery. The significant number of respondents within a short timeframe (5,448 completed surveys in 17 days) suggests a keen enthusiasm among the public to learn about the cervical spine. These findings emphasize the critical need to distribute comprehensive and easily understandable educational resources concerning the cervical spine [6]. Accurate and up-to date information will empower patients to make well-informed decisions about their healthcare [5,9]. Providing easily accessible prevention strategies will equip the public with the necessary tools to invest in their future well-being.

It is noteworthy that the survey results underscored the necessity for focused education, given the diverse interests among the surveyed individuals. For instance, although the majority expressed an interest in acquiring knowledge about neck disorders, a significant number also displayed an inclination towards understanding specific conditions such as cervical myelopathy, cervical spinal stenosis, disc herniation, and pinched nerves. Furthermore, the findings revealed that 28% of the participants expressed a desire to receive information on massage and acupuncture as alternative non-surgical approaches for managing neck pain and discomfort, thus highlighting their interest in exploring other modalities [10-14].

Through a collaborative effort involving healthcare providers and patient-centered organizations, such as the National Spine Health Foundation and the Coalition for Spine Health, the public can access easily understandable information on prevention strategies and available treatment options. This endeavor aims to promote patient engagement, foster trust in the healthcare system, and uphold patient autonomy. The survey results can serve as a guide for patient education, prioritizing topics that generate the greatest public interest. Essential educational materials, including brochures, videos, public service announcements, website content, and social media posts, should offer comprehensive information on cervical spinal care. It is crucial to avoid using complex medical terminology to ensure proper comprehension [5]. By providing consumers with access to these resources, awareness of the benefits of preventive measures can be raised, understanding of cervical spine conditions can be improved, and informed decisions about care can be facilitated [3,5,7,9].

As per the findings of the cervical spine survey conducted by the National Spine Health Foundation, there exists a public interest in receiving education regarding topics related to the cervical spine. It is imperative for spine experts to prioritize the development and dissemination of patient education materials and resources in a manner that is easily comprehensible and accessible. These resources should be aimed at the general population, providing them with information on effective preventive strategies and equipping patients with the necessary knowledge to make informed decisions about operative and non-operative care, ultimately leading to

improved outcomes. Further research is warranted to discern the specific informational needs of distinct target populations, such as patients suffering from cervical spine disease, in comparison to those who do not. Assessing the impact of patient education interventions would serve as a valuable next step in this process.

Conclusions

According to the National Spine Health Foundation's cervical spine survey results, there is interest among the public in receiving education on topics relating to the cervical spine. Healthcare providers must prioritize developing and distributing patient education materials and resources. These resources should (1) target the general population to outline effective preventative strategies and (2) provide patients with the necessary information to make informed decisions regarding operative and non-operative care, ultimately leading to improved outcomes. Further research is needed to differentiate the informational requirements of target populations such as patients suffering from cervical spine disease from those who do not. Evaluating the impact of patient education interventions is a useful next step.

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