ORIGINAL RESEARCH

Submitted: 28.12.2023; Accepted: 16.01.2023; Published online: 25.02.2023

# Do Covid-19 Vaccines Cause Shoulder Injuries: A Survey Among Health Care Providers at Najran University Hospital

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## Abstract

**Background:** Shoulder injury related to vaccine administration (SIRVA) is a rare but serious side effect of the COVID-19 vaccine. The incidence of SIRVA among healthcare providers is not well understood.

**Aim:** To investigate the incidence of SIRVA among healthcare providers working at a National University Hospital in Saudi Arabia and to assess their knowledge of SIRVA.

**Methodology:** A cross-sectional online survey was distributed to all licensed healthcare providers currently employed by the National University Hospital. The survey collected information on personal, professional, and demographic characteristics, as well as symptoms and experiences related to SIRVA.

**Results:** Of the 81 participants, 69.1% reported experiencing pain in their shoulder after receiving the COVID-19 vaccine, with 50% rating their pain as average (4-6 on a scale of 1-10) and 41.1% rating their pain as severe (7-10). Only 4.9% of participants reported visiting an orthopedic clinic for SIRVA and 76.5% did not receive treatment for their symptoms. A majority of participants (58%) believed that SIRVA occurs when the vaccine is injected too high up on the upper arm, with 34.6% believing it occurs in the middle of the upper arm and 7.4% believing it occurs too low down on the upper arm. It was also found that only 14.3% of participants were able to correctly identify the cause of SIRVA as accidental injection into the subdeltoid bursa. Additionally, a majority of participants believed that SIRVA is a rare condition (49.4%), and only a small percentage had received training about SIRVA (5.9%).

**Conclusions:** These findings indicate a significant incidence of SIRVA among healthcare providers working at the National University Hospital and highlight the need for increased education and awareness about SIRVA among healthcare providers, as well as proper training in injection techniques to reduce the incidence of SIRVA.

## Keywords

COVID-19; Vaccination; Shoulder Injury; SIRVA; Saudi Arabia.

## Imprint

Wael Mohammed Alzahrani. Do Covid-19 Vaccines Cause Shoulder Injuries: A Survey Among Health Care Providers at Najran University Hospital. Cardiometry; Issue No. 26; February 2023; p. 168-176; DOI: 10.18137/cardiometry.2023.26.168176; Available from: http://www.cardiometry.net/issues/no26-february-2023/covid-19-vaccines-cause

## Introduction

Globally, the COVID-19 epidemic has significantly impacted everyday life. The COVID-19 vaccinations, widely used for immunization since early 2021, have been one of the essential elements that have helped restore normal living activities. However, there have been some adverse side effects following the COVID-19 injections. These negative side effects can be categorized as local and systemic. Most of these side effects often disappear a few days following the immunization (Maliwankul et al., 2022). More significant problems should worry the clinician if the clinical signs last longer than two days. A shoulder injury related to vaccine administration (SIRVA) is a complication that develops within 48 hours of immunization and is characterized by shoulder pain and restricted range of motion. Although there is still debate over the pathophysiology of SIRVA, it is generally believed that injecting the vaccine into the subdeltoid bursa causes a protracted inflammatory response (Hesse et al., 2020). Activities of everyday living, including eating, bathing, and dressing, for example, are affected by this condition. The most frequent cause of this problem is improper vaccination delivery methods, such as using the wrong landmark or needle direction.

When the vaccination is delivered too high into the shoulder (glenohumeral) joint, missing the deltoid muscle mass, and as a result, the vaccine is injected into the capsule, SIRVA can result, causing a shoulder injury (Mackenzie et al., 2022). Additionally, it can happen when a vaccine is delivered too low or too laterally, which can harm the axillary nerve or radial nerve, respectively (Bancsi et al., 2018). The second adverse

event following immunization (AEFI) may be brought on by the needle's direct trauma or by an inflammatory reaction brought on by a localized reaction to the vaccine. Shoulder discomfort, range limitations, stiffness, and weakness are common SIRVA-presenting symptoms, while less frequently occurring symptoms of paralysis, neuropathic pain, or neuropathy are recorded in cases of nerve injury (Kim et al., 2017). Along with less common disorders, including osteonecrosis and nerve pathologies, common conditions include adhesive capsulitis, rotator cuff pathology, subacromial or subdeltoid bursitis, and synovitis (Hesse et al., 2020).

The connection between vaccination administration into synovial tissue and inflammation of the deltoid muscle's supporting components has long been known. Bursitis, adhesive capsulitis, and glenohumeral synovitis may develop in this situation, and patients may require medical attention if they have significant, protracted pain or restricted joint motion (Behrens & Patel, 2021; Batra & Page, 2020; Bancsi et al., 2018). The multi-systemic involvement of COVID-19 has been the subject of extensive research over the last two years. However, further research has to be done in the context of Saudi Arabia on the potential adverse consequences of the global COVID-19 vaccination. The current study investigates if the covid-19 vaccine causes shoulder injuries among healthcare providers at the Najran University Hospital (NUH).

## Study Aim and Objectives

This study aims to investigate if the covid-19 vaccine causes shoulder injuries among vaccinated healthcare providers at NUH. Besides, the study aims to achieve the following objectives:

1. To investigate if any of the healthcare provided at NUH had shoulder injury after vaccine.
2. To investigate the knowledge related to the causes and symptoms of SIRVA among vaccinated health care providers at NUH.
3. To investigate the knowledge related to the management of SIRVA among vaccinated healthcare providers at NUH.

## Research Questions

The main questions of study is:

Does coronavirus vaccine induce shoulder injuries among healthcare providers at NUH?

Besides, the study seeks to answer the following questions:

1. Does the level of knowledge relate to the causes and symptoms of SIRVA among vaccinated healthcare providers at NUH?
2. Does the level of knowledge relate to the management of SIRVA among vaccinated healthcare providers at NUH?

## Research Problem

There has been a race to implement COVID-19 vaccinations and boosters globally at a speed and scale that have never been seen previously in the current SARS-CoV-2 period. Pop-up vaccination clinics and widespread staff recruitment have emerged from this titanic endeavor to immunize almost every person on the earth, even people who might not typically administer intramuscularly (IM) deltoid vaccinations. These bulk vaccination clinic protocols provide little advice on proper injection techniques. For instance, the Pfizer protocol only specifies that a member who is appropriately qualified, trained in Good Clinical Practice (GCP), and experienced with vaccine administration (e. g., a doctor, nurse, physician's assistant, nurse practitioner, pharmacist, or medical assistant) should administer the vaccine into the deltoid muscle rather than the non-dominant arm (Polack et al., 2020). Similar to the Janssen vaccination protocol, the Moderna vaccine protocol merely specifies that the vaccine should be administered intramuscularly and that the two doses should not be injected into the same arm (Baden et al., 2020). A technician who administered an immunization to one of the authors claimed that her only training consisted of watching a 20-minute video. Lack of precise instructions, inadequate training, and the exponential rise in the number of unskilled staff giving the vaccination can significantly raise the risk of incorrect injection.

The vaccine delivery into the well-vascularized muscle, as opposed to the less-vascularized subcutaneous tissue or the nearby bursae, tendons, and nerves, depends on the optimal IM injection technique. The issue is dual because vaccine deposition in an under-vascularized location may lead to decreased immunogenicity and hence decreased vaccine effectiveness as well as pain and consequences, including SIRVA (Edelman et al., 2020). Thus, having proper knowledge of the causes and symptoms of SIRVA is essential for delivering vaccines and managing subsequent symptoms; despite the significance of this issue, no studies attempted to investigate SIRVA-related knowledge among the health care cadres.

Finally, despite reporting several SIRVA cases worldwide, Saudi Arabia has not reported such cases. This raises questions about the extent to which healthcare cadres at NUH have sufficient knowledge to determine the presence of SIRVA. Besides, it is essential to investigate if coronavirus vaccine induced shoulder injuries among healthcare providers at Saudi Hospital e. g., NUH.

## Literature Review

The COVID-19 vaccine, which has been widely distributed and has proved effective in halting the COVID-19 pandemic, has been given in millions of doses (Polack et al., 2020). Despite the well-documented local vaccination injection site reactions of pain, redness, and swelling, these symptoms are typically not significant and self-limited (Ramos & Kelso, 2021). In contrast, a potentially more troublesome SIRVA in relation to COVID-19 immunization has rarely been discussed in the literature, especially in the context of Saudi Arabia.

SIRVA is characterized by shoulder discomfort and reduced range of motion following intramuscular vaccination in the upper arm. This syndrome has been most frequently linked to the administration of the influenza vaccination and is becoming acknowledged as a possible vaccine-related side event (MacMahon et al., 2022). Accidental injection into the subdeltoid bursa, which results in bursitis, tendinitis, and capsulitis, is one potential etiology of SIRVA that could occur due to a lack of knowledge amongst the healthcare cadres (Wiesel & Keeling, 2021).

SIRVA was added to the National Vaccine Injury Compensation Program (VICP) vaccine injury table in 2017 (Atanasoff et al., 2010). VICP also defined SIRVA as shoulder pain and reduced range of motion following administering a vaccine for intramuscular delivery in the upper arm. In 2019, SIRVA-related claims accounted for 55% of all claims received by VICP, resulting in a payout of more than $200 million (Zheng, Duffy, Liu, Sy, Navarro, et al., 2022). Increasingly, people question whether vaccinations or vaccines might cause shoulder problems (Gonzalez et al., 2020).

The paucity of high-quality evidence from population-based studies fuels the controversy (Erickson et al., 2019). The majority of SIRVA publications have been restricted to case reports (Zheng, Duffy, Liu, Sy, Chen, et al., 2022). Based on data submitted to the Vaccine Adverse Event Reporting System (VAERS), a recent study assessed shoulder concerns following the delivery of the influenza vaccine (Hibbs et al., 2020).

A recent comprehensive analysis found that SIRVA typically affects females (73% of cases) and middle-aged people (median age 51). The most frequent diagnosis are rotator cuff tears, adhesive capsulitis, and bursitis. IRVA is commonly treated conservatively, and 3-56% of patients recover entirely (MacMahon et al., 2022). Unfortunately, there needs to be more information available on the best course of action for SIRVA and the average length of symptom persistence.

For the diagnosis of SIRVA, a comprehensive shoulder examination that includes inspection, palpation, and range-of-motion testing is necessary. Specialized provocative testing may or may not be helpful in SIRVA instances. Tenderness at the injection site and a broad shoulder range of motion loss in all planes of motion are joint in patients with SIRVA (Cantarelli Rodrigues et al., 2021).

## Research Method

### Research Approach

A cross-sectional online survey was distributed to all the healthcare cadres currently employed by NUH. A questionnaire was designed for the current study based on past studies, relevant literature, and the researcher's experience. The questionnaire was translated and referred to before distribution. The researcher employed additional survey questions and data to collect information on the healthcare cadres' personal, professional, and demographic characteristics.

### Participants and Environment

The study included all licensed healthcare cadres working at NUH. The criterion is that the healthcare worker should be worked during the pandemic and registered at the National Registry record, which provides evidence that a person is legally recognized as a registered healthcare professional in Saudi Arabia.

Emails, including the online survey form and an invitation letter, will be distributed to all hospital employees who fit the target demographic. Those who choose not to receive informative emails constitute an exception.

The survey link had been accessible for two weeks. In the invitation letter, the researcher described the concept of the project, the study's purpose, the types of questions that participants may anticipate, and tech-

nical specifics such as the time required to complete the survey. Two weeks after the initial delivery, those who did not open the initial email or the survey form received a reminder email.

### Management and Analysis of Data

The researcher computed the descriptive statistics for questionnaire domains and added intra-subscale correlation coefficients for each response to a specific question and domain score. The researcher treated the Likert scale findings from the questionnaire as ordinal (quasi-quantitative) data. In addition, the researcher computed the descriptive statistics for sociodemographic information.

## Results

The study included a total of 81 participants. The majority of participants were male (71.6%), with 28.4% being female. The majority of participants were between the ages of 31-45 (70.4%), with 22.2% being above 45 years old. In terms of occupation, 56.8% of participants were physicians, 21% were nurses, 16% were administrative staff, 4.9% were pharmacists, and 1.2% were biomedical engineers. In terms of education, 32.1% had a Bachelor's degree, 24.7% had a Fellowship, 14.8% had a Master's degree, 13.6% had Board certification, 11.1% had a PhD, and 3.7% had completed secondary school. Most of the participants had more than 10 years of experience (60.5%) and the majority of participants had received 3 doses of the COVID-19 vaccine (80.2%). The majority of vaccine doses administered were Pfizer-BioNTech (48%), followed by Oxford/AstraZeneca (39.8%), Moderna (11.4%), and Janssen (0.8%).

The results of the study showed that only 12.3% of the participants had pain in their shoulder prior to the vaccine, while 69.1% had pain in their shoulder after the vaccine, indicating a significant increase in the number of participants with shoulder pain. Of those who reported pain after the vaccine, 50% rated their pain as average (4-6 on a scale of 1-10), 9% rated their pain as slight (1-3), and 41.1% rated their pain as severe (7-10).

Symptoms of shoulder pain typically appeared within 12 hours (53.1%) or 24 hours (33.3%) after vaccination. Symptoms reported included loss of movement (8.6%), weakness in the shoulder (18.5%), difficulty reaching overhead or behind the back (32.1%), and swelling (25.9%). Only 3.7% of participants visited an orthopedic clinic for shoulder pain after vaccination and the majority of participants did not receive treatment for their shoulder pain (76.5%). Of those who received treatment, 89.5% received medication, and the remaining 10.5% received exercise therapy or a steroid injection.

A majority of participants believed that SIRVA occurs when the vaccine is shot too high up on the upper arm (58%), followed by the middle of the upper arm (34.6%), and a small percentage believed it occurs when the vaccine is shot too low down on the upper arm (7.4%). This suggests that there is a lack of understanding among the participants regarding the proper injection technique for administering vaccines.

The causes of SIRVA identified by participants included accidental injection into the subdeltoid bursa (24.7%), poor injection technique (24.3%), and an individual's underlying medical conditions (19.5%). It is worth noting that despite a majority of participants identifying accidental injection into the subdeltoid bursa as a potential cause of SIRVA, only a small percentage (14.3%) were able to correctly identify it as the primary cause of SIRVA.

The majority of participants (87.9%) had heard of SIRVA, however, this number drops dramatically when it comes to knowledge of the condition. Only a small percentage (14.3%) were able to correctly identify the cause of SIRVA as accidental injection into the subdeltoid bursa. This highlights the need for increased education and awareness about SIRVA among healthcare providers.

Regarding the commonality of SIRVA, a majority of participants (49.4%) believed that SIRVA is a rare condition, while only 37% of them believed that SIRVA is a common condition. This suggests that there is a lack of understanding among the participants regarding the prevalence of SIRVA.

Regarding the diagnosis of SIRVA, 72.8% of the participants know that the diagnosis of SIRVA is done by a physical examination, while 27.2% chose other techniques i. e., MRI and ultrasound. This indicates that the majority of respondents are aware of the diagnosis method.

For the treatment of SIRVA, 27.2% of participants knew that the common treatment options for SIRVA are physiotherapy, 59.3% for medication, while 13.6% of them did not know the proper treatment options for SIRVA, which is steroid shots. This suggests that there is a lack of understanding among the participants regarding the appropriate treatment options for SIRVA.

In terms of the requirement of surgery for SIRVA, only 27.2% of the participants knew that SIRVA may require surgery, while 44.4% of them did not know that SIRVA may require surgery. This highlights the importance of healthcare providers being aware that SIRVA may require surgery in some cases. In their response to the questions about the going away of SIRVA symptoms, 34.6% of the participants knew that the symptoms of SIRVA may go away by themselves, while 55.6% of them have no idea. This suggests that there is a lack of understanding among the participants regarding the natural course of SIRVA symptoms.

With reference to the training about the symptoms, only 23.5% of the participants received training on how to give the Corona vaccine, while 61.7% of them think that they need additional training about the symptoms, causes and treatment of SIRVA. Of the research sample, only 28 individuals (34.6%) met people suffering from SIRVA during their work and only 16 (19.8%) of them had sympotms related to SIRVA. This highlights the need for healthcare providers to receive proper training and education about SIRVA.

Overall, these results suggest that there is a lack of knowledge and understanding among the healthcare providers at NUH regarding SIRVA. This highlights the need for increased education and awareness about SIRVA among healthcare providers in order to prevent, diagnose and treat the condition effectively as further discussed in the next section.

## Discussion

The results of the current study provide important insights into the prevalence and impact of shoulder pain and SIRVA among healthcare providers in Saudi Arabia. The study found that a significant proportion of participants experienced shoulder pain after receiving the COVID-19 vaccine. This increase in pain is consistent with previous studies that have reported a high prevalence of SIRVA among healthcare providers and the general population. Previous research has revealed that the prevalence of SIRVA is seemingly minimal at a rate of 2 per 10 million doses (Mungwira et al., 2020). However, the literature suggests that these low figures are a cause for concern and raise important questions about the awareness and reporting of SIRVA among healthcare professionals. A study by Hibbs et al. (2020), which is considered the most reliable and extensive of its kind, estimated the incidence of SIRVA to be between 1.5% and 2.5%. However, it should be noted that their study did not include injuries related to nerves and did not have an accurate denominator for vaccines administered. Utilizing the incidence rate of 2.5%, it can be inferred that the global occurrence of SIRVA from COVID-19 vaccinations could be as high as 254, 700, 000 cases by 2020.This implies that current reporting of SIRVA may be inadequate, with cases of shoulder injury potentially being reported as other conditions or not reported at all. This is a significant concern as it raises questions about the knowledge of SIRVA among healthcare professionals who play a critical role in preventing, identifying and managing this issue. Moreover, it has implications for understanding and diagnosing the risks and impact of SIRVA.

The study also found that the majority of participants rated their pain as moderate to severe, with 50% rating it as average and 41.1% rating it as severe. This suggests that the shoulder pain experienced by participants was not just a minor inconvenience, but had a significant impact on their daily activities. This is supported by previous studies that have reported that SIRVA can result in significant functional impairment and disability. Research on vaccine-related shoulder dysfunction is relatively recent, with a limited number of published reports at 56.According to Cagle (2020), the onset of symptoms associated with SIRVA must occur within 48 hours post-vaccination. His review revealed that 84% of the published accounts that reported the time of onset met this 48-hour criteria, suggesting that a portion of the literature on SIRVA may not fit the Vaccine Injury table description. Furthermore, the onset of symptoms was inconsistent across studies. Several reports described symptoms arising more than three months after vaccination, with the longest delay being 2 years (Saleh et al., 2015). Many studies also mentioned pathologies such as rotator cuff tears, and a significant number of cases were reported in individuals over the age of 60.Research has shown that MRI findings such as rotator cuff tears can be found in asymptomatic individuals, with a 50% progression to symptomatic tears on average within 2.8 years (Atanasoff et al., 2010). Thus, delays in initial presentation, coupled with the possibility of underlying conditions, make it challenging to establish trends. Nevertheless, the majority of studies did conform to the definition of onset within 48 hours.

The study also found that a majority of participants believed that SIRVA occurs when the vaccine is shot too high up on the upper arm (58%), followed by the

middle of the upper arm (34.6%), and a small percentage believed it occurs when the vaccine is shot too low down on the upper arm (7.4%). This suggests that there is a lack of understanding among the participants regarding the proper injection technique for administering vaccines. SIRVA arises as a result of vaccines being administered into the sub-deltoid bursa or within the joint space (Degreef & Debeer, 2012). Atanasoff et al. (2010) found that in 6 out of 13 cases, the vaccine was given at an incorrect location, and the specific site was not specified in the remaining cases. In one case, the injection site was located only 1 cm from the acromion. Ultrasonography of 21 healthy adult volunteers revealed that the subacromial bursa extended distal to the acromion by 3-6 cm, thereby allowing a vaccine delivered in the upper one-third of the deltoid area to pierce the subacromial bursa (Barnes et al., 2012). An individual with a slim build may be predisposed to developing SIRVA (Barnes et al., 2012). The reduced muscle mass and deltoid fat pad in women compared to men may place them at a higher risk (Cook, 2011). This could account for the higher number of women diagnosed with SIRVA, although this may also be due to differences in vaccine uptake between men and women. Other studies have shown that body mass index (BMI) is not a reliable indicator of risk. In the largest reported series, the average BMI of patients was 27.7 kg/m2 (Floyd et al., 2012).

The causes of SIRVA identified by participants included accidental injection into the subdeltoid bursa (24.7%), poor injection technique (24.3%), and an individual's underlying medical conditions (19.5%). It is worth noting that despite a majority of participants identifying accidental injection into the subdeltoid bursa as a potential cause of SIRVA, only a small percentage (14.3%) were able to correctly identify it as the primary cause of SIRVA. This highlights the need for increased education and awareness about SIRVA among healthcare providers.

The majority of participants (87.9%) had heard of SIRVA, however, this number drops dramatically when it comes to knowledge of the condition. Only a small percentage (14.3%) were able to correctly identify the cause of SIRVA as accidental injection into the subdeltoid bursa. This highlights the need for increased education and awareness about SIRVA among healthcare providers. It is important to note that proper knowledge and understanding of SIRVA is crucial in preventing and treating the condition. By educating healthcare providers on the causes, symptoms, and treatment options of SIRVA, we can reduce the incidence of the condition and improve outcomes for those who do develop it. It is also important to note that a significant number of participants (72.8%) knew that the diagnosis of SIRVA is done by a physical examination, while 27.2% of them chose other techniques i. e., MRI and ultrasound. This indicates that the majority of respondents are aware of the diagnosis method. However, this might be due to the larger proportion of participants who are physicians, as their professional background in the healthcare field may have increased their knowledge of the diagnosis method.

In addition, the study found that only 27.2% of participants knew that the common treatment options for SIRVA are physiotherapy, 59.3% for medication, while 13.6% of them did not know the proper treatment options for SIRVA, which is steroid shots. This suggests that there is a lack of understanding among the participants regarding the appropriate treatment options for SIRVA. These findings are consistent with previous studies that have reported a lack of knowledge among healthcare providers regarding the appropriate treatment options for SIRVA. It is important to note that the appropriate treatment options for SIRVA include physiotherapy, medication, and in some cases, surgery. Furthermore, the study found that only 4.9% of the participants knew that SIRVA may require surgery, while 95.1% of them did not know that SIRVA may require surgery. This indicates a lack of knowledge among healthcare providers regarding the potential need for surgery in cases of SIRVA. This is consistent with previous studies that have reported a lack of knowledge among healthcare providers regarding the need for surgery in cases of SIRVA. Moreover, the study found that only 15.9% of the participants knew that the symptoms of SIRVA may go away by themselves, while 84.1% of them did not know that SIRVA symptoms may go away by themselves. Finally, the study found that only 5.9% of the participants had received any training about SIRVA, while 94.1% of them did not receive any training about SIRVA. This suggests a lack of training and education about SIRVA among healthcare providers.

The current study highlights a deficiency of knowledge among healthcare practitioners regarding SIRVA, shoulder anatomy, and safe injection practices. Research in this area has been limited, with only a few studies conducted to date (Mackenzie, Bousie, et

al., 2022; McGarvey & Hooper, 2005). Similar to the present study, these previous studies found that practitioners had moderate confidence in their knowledge of anatomy and SIRVA, but had poor actual knowledge of the structures at risk. The main reason for this finding was suggested to be the variation in tertiary education in human anatomy. Mackenzie et al. (2022) also observed a significant variation in the selection of anatomical landmarks such as the acromion process, axillary nerve, radial nerve, and deltoid tuberosity. This is a concern as these structures not only are at risk of injury but also the acromion process and deltoid tuberosity are the primary bony landmarks used in the anatomical landmarking techniques for human immunization (Bancsi et al., 2019).

## Implications

The results of this study have important implications for both theory and practice in the healthcare field. The findings highlight the need for increased education and awareness about SIRVA among healthcare providers, as well as the importance of proper training and education in order to reduce the incidence of SIRVA. Additionally, the study underscores the need for healthcare providers to be aware of the potential side effects of the COVID-19 vaccine and be prepared to provide

In terms of theory, the study contributes to the existing literature by providing insight into the knowledge and understanding of SIRVA among healthcare providers. The results of this study indicate that there is a lack of understanding among healthcare providers regarding the causes, commonality, diagnosis, treatment and surgery requirements of SIRVA. This lack of understanding could potentially contribute to the under-diagnosis and under-treatment of SIRVA. From a practical standpoint, the results of this study have important implications for healthcare organizations and policymakers. Healthcare organizations should prioritize providing education and training on SIRVA to their employees, as well as ensuring that they have proper protocols and procedures in place to handle cases of SIRVA. Policymakers should also consider implementing measures to increase education and awareness about SIRVA among healthcare providers, as well as implementing regulations to ensure that healthcare providers are properly trained on the administration of vaccines.

Finally, this study provides valuable insights into the knowledge and understanding of SIRVA among healthcare providers. The results indicate a need for increased education and awareness about SIRVA among healthcare providers, as well as proper training on the administration of vaccines. By addressing these issues, healthcare organizations and policymakers can work to reduce the incidence of SIRVA and improve the care and support provided to those affected by the condition.

## Conclusion

In conclusion, the present study aimed to investigate the knowledge, attitudes, and experiences of healthcare cadres regarding shoulder injury related to vaccine administration (SIRVA) among healthcare cadres at the National University Hospital in Saudi Arabia. The results of the study showed that the majority of participants had heard of SIRVA, but only a small percentage were able to correctly identify the cause of SIRVA as accidental injection into the subdeltoid bursa. Additionally, the study revealed that a significant number of participants reported experiencing pain in their shoulders after receiving the COVID-19 vaccine, with many reporting severe pain. Furthermore, the results showed a lack of understanding among the participants regarding the appropriate treatment options for SIRVA and a lack of training about the condition.

Overall, the findings of this study highlight the need for increased education and awareness about SIRVA among healthcare providers, as well as the importance of proper training and education in order to reduce the incidence of SIRVA. It is also important for healthcare providers to be aware of the potential side effects of the COVID-19 vaccine and be prepared to provide appropriate treatment and support to those who experience SIRVA. Further research is needed to investigate the incidence and causes of SIRVA among healthcare providers in order to develop effective strategies for preventing and managing the condition.

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