

Study on spinal anesthesia drugs used in Misurata hospitals for the year 2022.

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الملخص:

المقدمة: يستخدم التخدير النخاعي بشكل شائع في العمليات الجراحية مثل العمليات القيصرية، وجراحات الأطراف السفلية، وبعض عمليات المسالك البولية. بداية التأثير سريعة، ومدة التخدير أقصر نسبيًا مقارنة بالتخدير العام. هناك العديد من الأدوية التي تستخدم في التخدير النخاعي، ومن أهمها: ليدوكائين، بوبيفاكاين، ليدوكائين، تتراكائين، ميبيفاكاين، روبيفاكاين، ليفوبوبيفاكاين، وكلوروبوكائين. أهداف الدراسة: تهدف الدراسة الحالية إلى اكتشاف أكثر أدوية التخدير النخاعي شيوعاً المستخدمة في العمليات الجراحية، وتقييم مضاعفات هذه الأدوية، من قبل أطباء التخدير في مستشفيات مصراتة. المنهجية: كان هناك ما مجموعه 48 طبيب التخدير. وكان أفراد العينة يعملون في مستشفيات مختلفة في مدينة مصراتة (المستشفيات العامة والخاصة). تم توزيع الاستبيانات على أطباء التخدير في 2022. النتائج: أظهرت النتائج أن العدد الأكبر من المستهدفين لديهم سنوات خبرة من (6-10) سنوات بنسبة (35.4%). كما أن الغالبية العظمى من المستهدفين كانوا يعملون في القطاعين العام والخاص حيث بلغت نسبتهم (78.7%). وبالنظر إلى النتائج التي تم جمعها من خلال عينة عشوائية من أطباء التخدير داخل مستشفيات مصراتة، نلاحظ أن معظم الأطباء يستخدمون الموركاين الثقيل كخيار أول في التخدير الناحي، حيث بلغت النسبة (52.4%)، في حين تم إضافة دواء آخر إلى الموركاين الثقيل كخيار ثاني بنسبة (33.3%). بالإضافة إلى ذلك، فإن أحد أهم الأسباب التي تحدد اختيار الدواء في الصداق النصفى هو نوع الجراحة وطريقة إعطاء الدواء، في حين أن أحد أهم أسباب إضافة دواء آخر إلى الموركاين الثقيل هو تقليل الآثار الجانبية. أو مضاعفات هذا الدواء وجعله أكثر أماناً.

Abstract:

Introduction: Spinal anesthesia is commonly used for procedures such as cesarean sections, lower limb surgeries, and certain urological procedures. The onset of action is rapid, and the duration of anesthesia is relatively shorter compared to general anesthesia. There are many medications that are used in spinal anesthesia, the most important of which are: Lidocaine, Bupivacaine, Lidocaine, Tetracaine, Mepivacaine, Ropivacaine, Levobupivacaine, and Chloroprocaine. Aims of study: The purpose of the present study is to discover the most common spinal anesthetics used in surgical operations by anesthesiologists in Misurata hospitals. Methodology: There were total of 48 anesthesiologists. The respondents have worked in different hospitals in Misurata (public and private hospitals). Questionnaires were distributed to anesthesiologists in 2022. Results: The results show us that the largest number of the target audience had years of experience from (6-10) years, with a percentage of (35.4%). In addition, the vast majority of the targets were working in both the public and private sectors, where their percentage was (78.7%). In view of the results collected through a random sample of

anesthesiologists inside Misurata hospitals, we note that most doctors use heavy morcaine as the first choice in regional anesthesia, where the percentage reached (52.4%), while other drug was added to it as a second choice, with a percentage of (33.3%). In addition, one of the most important reasons that determines the choice of medicine in migraine is the type of surgery and the method of giving the medicine, while one of the most important reasons for adding another drug to heavy morcaine is to reduce the side effects or complications of this medicine and make it safer.

keywords: Spinal Anesthesia, Misurata Hospitals

Definition of terms:

The following terms are defined to provide the reader the correct understanding of the terms **used in the study:**

Spinal anesthesia: is a type of regional anesthesia that includes the injection of a local anesthetic drug into the cerebrospinal fluid (CSF) in the spinal canal. This procedure is performed by a trained healthcare professional, typically an anesthesiologist, and is used to numb a specific region of the body below the level of the injection (Fettes PD, et al., 2009).

Public hospitals: are healthcare facilities that provide medical services to the general public. These hospitals are typically funded and operated by the government or local authorities (Casino, 2013).

Private hospitals: are healthcare facilities that are owned and operated by a private organization or individual. private hospitals rely on patient fees, insurance payments, and other private sources of funding (Medical Dictionary for the health professions and nursing, 2012).

Patient: is an individual who seeks medical care or treatment from a healthcare professional or facility. They typically visit healthcare providers, such as doctors, nurses, or specialists, to receive diagnosis, treatment, or preventive care for their health concerns (Mrayyan, M, 2006).

Drug: "medication" or "medicine." It refers to substances that are used to diagnose, treat, or prevent diseases, alleviate symptoms, or promote healing in the body (Bertram G. et al., 2008).

Side effects: refers to the unintended or unwanted effects that can occur after taking a medication or undergoing a medical treatment. It is important to note that not all individuals will experience side effects, and the occurrence and severity of side effects can vary depending on factors such as the individual's health condition, age, and dosage of the medication (David.F, 2000).

Introduction

There is a difference between general anesthesia and spinal anesthesia. General anesthesia is a state of controlled unconsciousness induced by administering intravenous drugs and inhaled anesthetics. It affects the entire body, including the brain, and renders the patient unconscious and unaware of the surgical procedure. General anesthesia is used for various surgical procedures, including major surgeries, where the patient needs to be completely still and pain-free. It requires the use of a breathing tube to maintain a patent airway and mechanical ventilation. General anesthesia provides complete muscle relaxation, pain relief, and amnesia. Spinal anesthesia is a regional anesthesia technique that involves injecting a local anesthetic into the cerebrospinal fluid in the spinal canal. It numbs the lower half of the body, including the abdomen, pelvis, and legs, while the patient remains awake or lightly sedentary. Spinal anesthesia is commonly used for procedures such as cesarean sections, lower limb surgeries, and certain urological procedures; the onset of action is rapid, and the duration of anesthesia is

relatively shorter compared to general anesthesia (Tufts, 2021). Spinal anesthesia, also known as spinal or subarachnoid block, has a long and fascinating history. The technique was first introduced in the late 19th century by August Bier, a German surgeon. Bier performed the first successful spinal anesthesia on a patient in 1898. Since then, spinal anesthesia has become an essential tool in modern medicine, particularly in surgical procedures involving the lower abdomen, pelvis, and lower limbs. It provides effective pain relief and muscle relaxation by injecting local anesthetic medication into the subarachnoid space, which surrounds the spinal cord. Over the years, advancements have been made in the field of spinal anesthesia, including the development of new drugs, improved techniques, and the use of ultrasound guidance for accurate needle placement. These advancements have contributed to the safety and efficacy of spinal anesthesia, making it a widely used and preferred method of anesthesia for many surgical procedures (Abdulquadri M and Joe M, 2021). It is important to note that spinal anesthesia should only be performed by trained medical professionals, as it carries certain risks and complications. However, when administered correctly, spinal anesthesia can provide excellent pain control and minimize the need for general anesthesia in certain cases (Abdulquadri M and Joe M, 2021). When performing a spinal anesthetic using the midline method, the layers of anatomy that are traversed (from posterior to anterior) are skin, subcutaneous fat, supraspinous ligament, interspinous ligament, ligamentum flavum, dura mater, subdural space, arachnoid mater, and then the subarachnoid space. When the paramedian method is applied, the spinal needle should traverse the skin, subcutaneous fat, paraspinal muscle, ligamentum flavum, dura mater, subdural space, and arachnoid mater and finally pass into the subarachnoid space (Adrian Chin and André van Zundert, 2022). To perform spinal anesthesia, The patient is positioned either sitting or lying on their side, with their back curved and their knees drawn up towards their chest. The area where the needle will be inserted is cleaned and sterilized. A small amount of local anesthesia is injected into the skin and deeper tissues to numb the area and reduce discomfort during the procedure. Using anatomical landmarks or ultrasound guidance, the healthcare provider identifies the appropriate insertion site in the lower back, typically between the vertebrae L3-L4 or L4-L5. A thin, hollow needle is inserted through the skin and deeper tissues, carefully avoiding the spinal cord. The needle is advanced through the ligaments until it reaches the subarachnoid space. To ensure proper needle placement, the healthcare provider may perform a test to confirm the presence of cerebrospinal fluid (CSF) by observing the fluid flow or using a pressure manometer. Once the correct needle placement is confirmed, a predetermined dose of local anesthetic medication, such as bupivacaine or lidocaine, is injected into the subarachnoid space. This medication numbs the nerves and provides anesthesia to the intended area. The healthcare provider monitors the patient's vital signs and assesses the level of anesthesia. If necessary, additional medication may be administered to achieve the desired level of anesthesia. After the procedure, the needle is carefully removed, and a sterile dressing is applied to the insertion site. (Monica M, 2005). There are many medications that are used in spinal anesthesia, the most important of which are: Lidocaine (5%), Bupivacaine (0.75%), Lidocaine 5%, Tetracaine 0.5%, Mepivacaine 2%, Ropivacaine 0.75%, Levobupivacaine 0.5%, and Chloroprocaine 3% (Tonder S et al., 2021).

Objectives of the study:

The purpose of the present study is to discover the most common spinal anesthetics used in surgical operations by anesthesiologists in Misurata hospitals for the year 2022.

Methods:

This section described the research designs, participants and settings, research instrument, the data gathering procedure and appropriate statistical tools and drugs for interpretation and analysis of the data. According to Polit and Hungler (2004), quantitative description involves the prevalence, incidence, size and measurable attributes of a phenomenon. Descriptive studies assist the researcher to discover new meaning describing what exists, determining the frequency with which something occurs and categorizing information (Burns and Grove, 1999). The researcher used the descriptive design to understand the most common spinal anesthetics used in surgical operations in Misurata hospitals.

Participants and setting:

There were total of 48 anesthesiologists. The respondents have worked in different hospitals in Misurata (public and private hospitals). Questionnaires were distributed to anesthesiologists in March 2022. The study focused on the most common spinal anesthetics used in surgical operations in Misurata hospitals. In addition, the advantages and disadvantages for them. Moreover, the years of experience in anesthesia and place of work were included in this study. The findings may be used in planning to manage spinal anesthesia drugs, and discover the complications for these drugs. In this study, we also determined the reasons for choosing the anesthetic drug according to age of patient, type of operation and length of surgery.

Statistical methods:

- Frequencies & Percentages to identify the primary characteristics of the vocabulary of the study sample, and determine the responses of its vocabulary to the scale statements included in the study tool. Percentages are a mathematical expression for comparing numbers of the same type or units of measurement.

Data gathering procedure:

The researcher secured all necessary permission from concerned Misurata hospitals in the conduct of the study. The data for this study were collected by distributing questionnaires to a group of anesthesiologists in different hospitals in Misurata, and This is after the hospitals approve the letter submitted to them.

Search criteria:

- The anesthetic drug must be spinal anesthetic drug.
- The respondent must be anesthesiologist.
- The workplace of the respondents must be within the city of Misurata.

Results

The results guided the researcher in making recommendations, find out the most common spinal anesthetics used in surgical operations in Misurata hospitals. The information gathered from the participants is presented in the form of tables and charts. the questionnaire consist of two parts, part I addressed the profile variables of the respondents, and part II consist of The most common spinal anesthetics used in surgical operations in Misurata hospitals.

-Distribution of respondents according to years of experience

Table No. (1) Years of experience for the respondents.

Many years' experience in field of anesthesia	Frequency	Percent
1year- 5years	16	33.3
6-10 years	17	35.4
more than 10 years	15	31.3
Total	48	100.0

It is clear from Table (1) related to the distribution of respondents according to years of experience has not been the same that the percentage of 6-10 years reached (35.4%), which is equal to the percentage of 1year- 5years (33.3%). Followed by the expression more than 10 years where the percentage (31.3%), Figure (1) shows this.

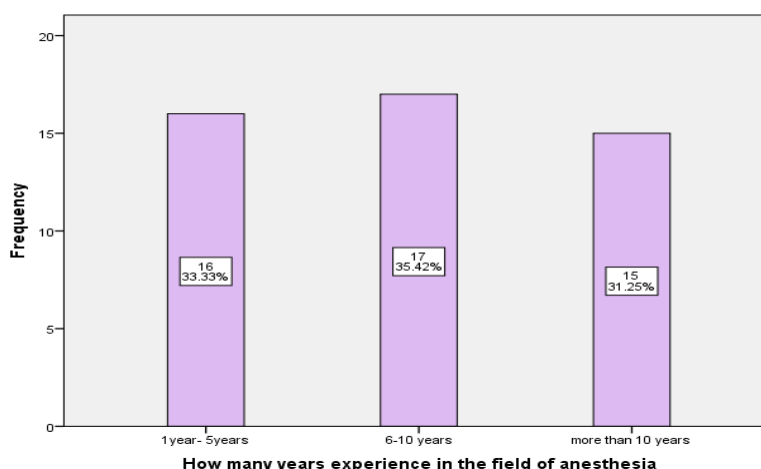


Figure (1) How many years experience in the field of anesthesia.

- Distribution of the place of work

Table No. (2) Distribution of the place of work

Distribution of the place of work	Frequency	Percent
Private	2	4.1
Public	9	18.75
Both	37	77.08
Total	48	100.0

It is clear from Table (2) related to the distribution of the study sample place of work that the percentage of both reached (77.08%), which is equal to the percentage of public place (18.75%). Followed by the private place where the percentage (4.1%), figure (2) shows this.

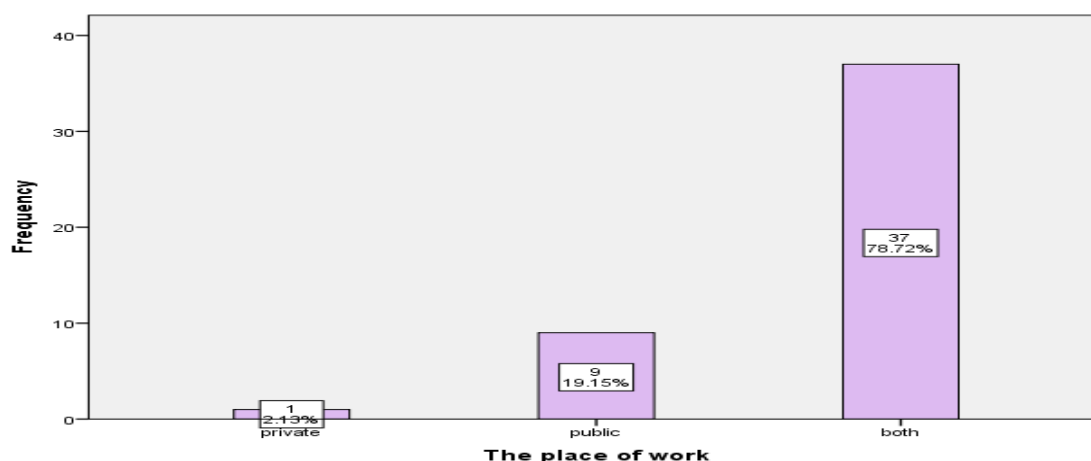


Figure (2) place of work

- Distribution of the choice the most common point are done it in spinal anesthesia

Table No. (3) Distribution of the choice the most common point are done it in spinal anesthesia

Distribution of the choice the most common point doctor are do it in spinal anesthesia	Frequency	Percent
heavy morcaine	33	52.4
Heavy morcaine+other drug	21	33.3
Plane morcaine	3	4.8
Plane morcaine+other drug	4	6.3
heavy Ropivacain	2	3.2
Total	63	100.0

It is clear from table (3) related to the distribution of the study sample the choice the most common point you are do it in spinal anesthesia that the percentage of heavy morcaine reached (52.4%), which is equal to the percentage of heavy morcaine + other drug (33.3%). Followed by the plane morcaine + other drug where the percentage (6.3%), then the plane morcaine where the percentage (4.8%), then the heavy Ropivacain where the percentage (3.2%), figure (3) shows this.

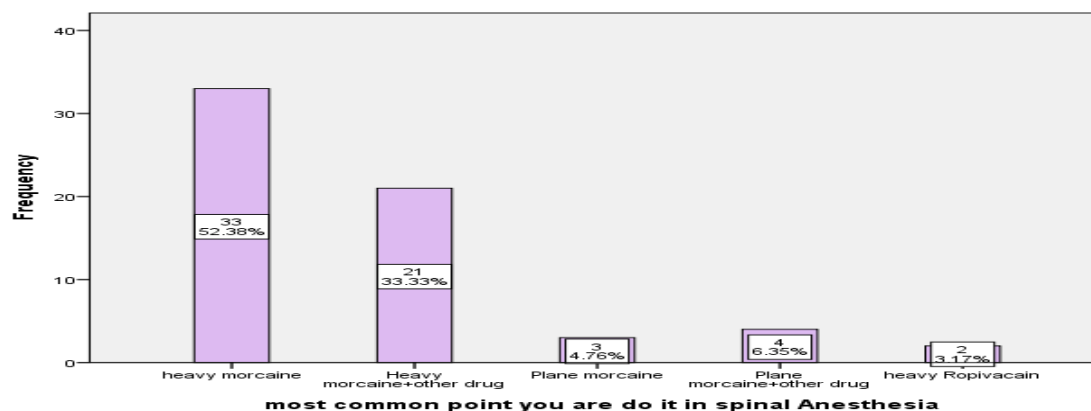


Figure (3) the most common point are done it in spinal Anesthesia

- Distribution according to the patient's age.

Table No (4) Distribution according to the patient's age

Doctor first choice in each time period	Frequency	Percent
Period 18-40y-old	13	27.08
Period 41-60y-old	24	50
Period >or = 60y-old	11	22.9
Total	48	100.0

It is clear from table (4) related to the distribution of the study sample based on the following age periods of patient, make your first choice in each period that the percentage of period 41-60y-old reached (50%), which is equal to the percentage of period 18-40y-old (27.08%). Followed by the period >60y-old where the percentage (22.9%), figure (4) shows this.

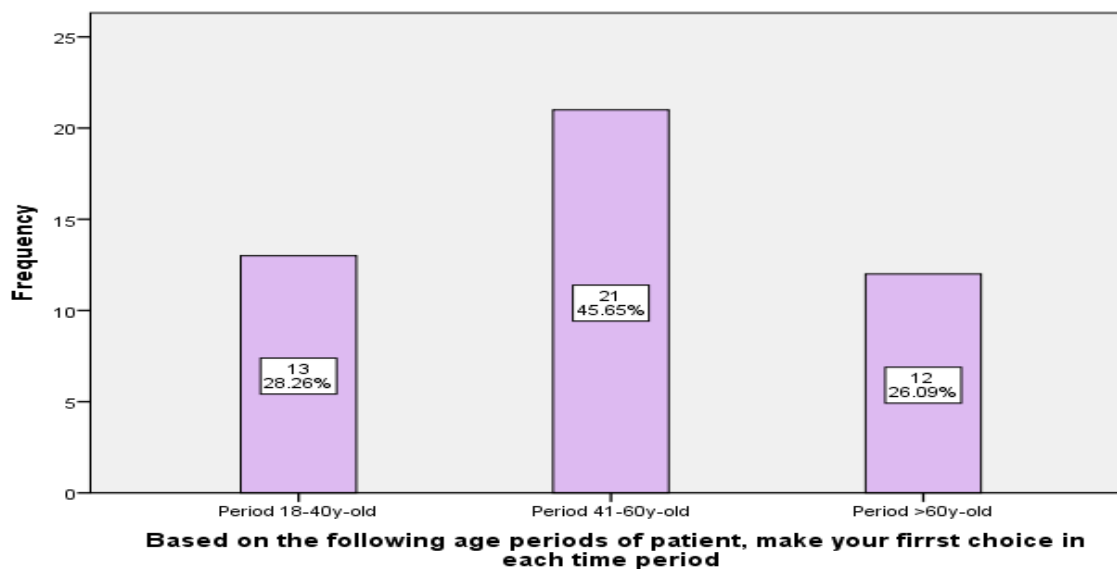


Figure (4) Distribution according to the patient's age

- Distribution according to the duration of the surgical procedure.

Table No. (5) Distribution according to the duration of the surgical procedure.

Duration of the operation	Frequency	Percent
<1	2	4.2
1-2 hours	31	64.6
>2	15	31.3
Total	48	100.0

It is clear from table (5) related to the distribution of the study sample arrange your selection according to the duration of the operation that the percentage of 1-2 hours (64.6%), which is equal to the percentage of >2 (31.3%). Followed by the <1 where the percentage (4.2%), figure (5) shows this.

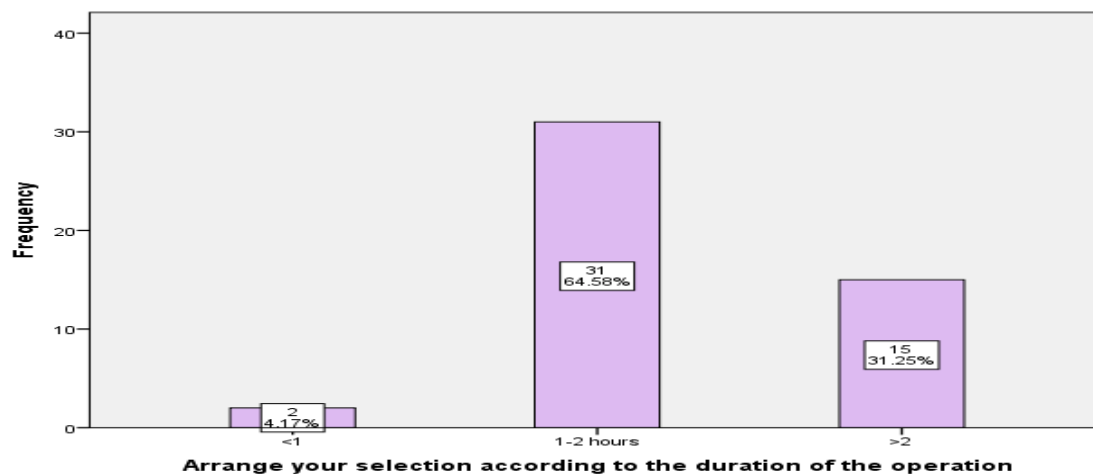


Figure (5) Distribution according to the duration of the surgical procedure.

-Distribution according to reasons for choice.

Table No. (6) Distribution according to reasons for choice.

The reasons for doctor first choice	Frequency	Percent
Types of operation (duration, site, site of drug administration)	26	44.1
Availability of drug	8	13.6
Medical reason (side effects and complications)	15	25.4
All the reasons	10	16.9
Total	59	100.0

It is clear from Table (6) related to the distribution of the reasons for your first choice that the percentage of Types of operation (duration, site of drug administration) reached (44.1 %), which is equal to the percentage of Medical reason (side effects and complications) (25.4%). Followed by the both where the percentage (16.9%), then the Availability of drug where the percentage (13.6%) Figure (6) shows this.

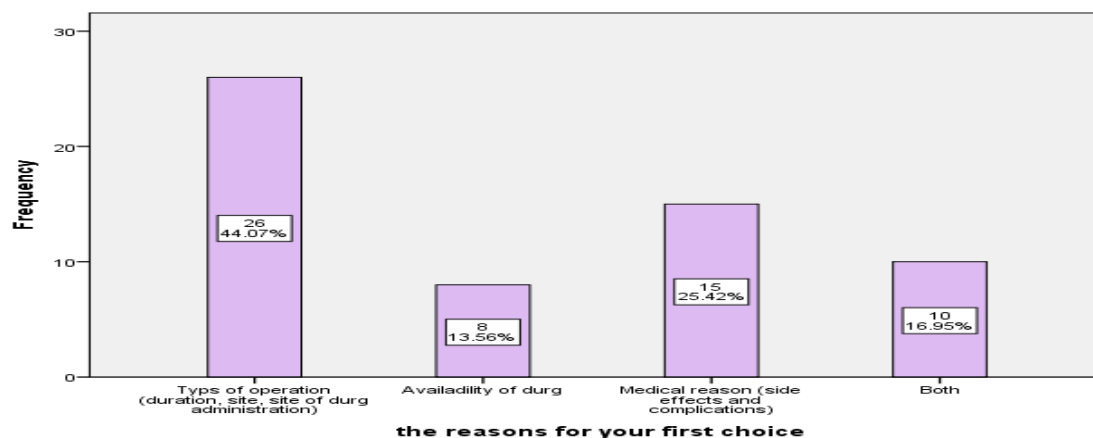


Figure (6) the reasons for your first choice

- Distribution according to the reasons for the second choice.

Table No. (7) Distribution according to the reasons for the second choice.

Duration of operation	Frequency	Percent
Type of operation(duration, site, site of drug administration)	15	29.4
Availability of drug	7	13.7
Medical reason (side effects and complications)	18	35.3
All the reasons	11	21.6
Total	51	100.0

It is clear from Table (7) related to the distribution Why make the second choice in this order that the percentage of Medical reason (side effects and complications) reached (35.3 %), which is equal to the percentage of Type of operation(duration, site, site of drug administration (29.4%). Followed by the expression both where the percentage (21.6%) then the Availability of drug where the percentage (13.7%), figure (7) shows this.

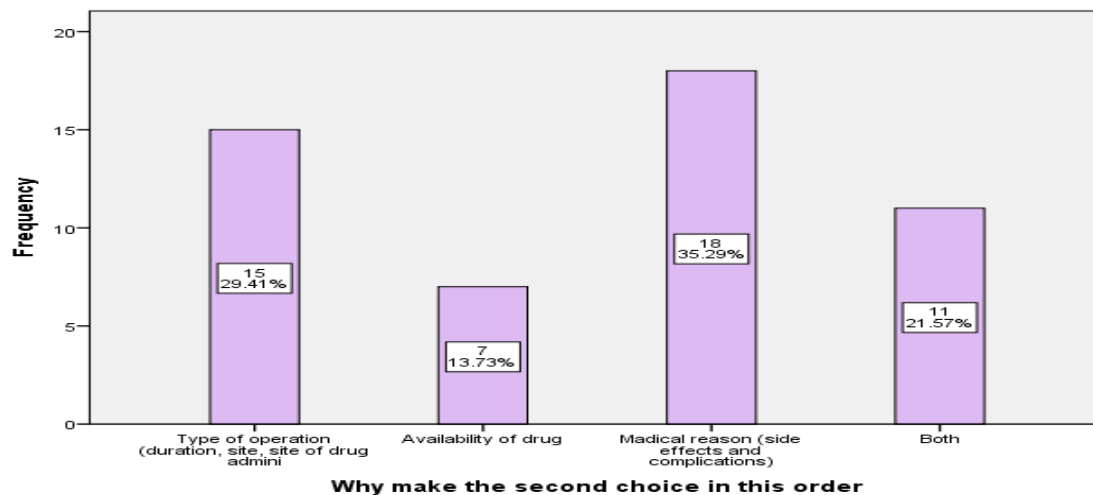


Figure (7) Distribution according to the reasons for the second choice.

Summary of findings:

The results show us that the largest number of the target audience had years of experience from (6-10) years, with a percentage of (35.4%). In addition, the vast majority of the targets were working in both the public and private sectors, where their percentage was (78.7%). In view of the results collected through a random sample of anesthesiologists inside Misurata hospitals, we note that most doctors use heavy morcaine as the first choice in regional anesthesia, where the percentage reached (52.4%), while heavy morcaine was added to it as a second choice, with a percentage of (33.3%). In addition, one of the most important reasons that determines the choice of medicine in migraine is the type of surgery and the method of giving the medicine, while one of the most important reasons for adding another drugs to heavy morcaine is to reduce the side effects or complications of this medicine and make it safer. This study also showed that anesthesiologists were used heavy morcaine with other drugs, and as a main factor is the continuation of the anesthesia period for a longer period than if it was heavy Marcaine alone. It is suitable for many cases from a medical point of view and in terms of the duration of the operation, as well as the rate of sensitivity and side complications. If other drugs are available,

the symptoms caused by this drug, such as heavy lidocaine and heavy bupivacaine, can be **reduced. Recommendations:**

- 1- The patient's age should be taken into consideration when choosing a muscle relaxant.
- 2- In some cases and in patients under the age of one year, it is preferable not to use a muscle relaxant during general anesthesia.
- 3- Dependence on the type and length of surgical procedures when choosing a muscle relaxant.
- 4- Alert the patient about the side effects that may occur after the end of the surgery, so that the patient does not feel anxious if these symptoms occur.

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