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Incidence and Outcome of Neurogenic Bladder in Thi-Qar

Professor Dr. Ali Abid Saadoon
(MBChB, MSc, Ph D Community Physician), Dean College of Medicine / University of Warith Al-Anbiayaa
ali.sa@uowa.edu.iq

Dr. Amjed Hassan Saheb
(MBChB, FICMS and CABMS in Neurosurgery), Al-Nasiriyah Teaching Hospital / Thi Qar Health Directorate

Dr. Hasan Naji Mutlag
(MBChB, FICMS in Neurosurgery), Al-Hussein Teaching Hospital / Thi Qar Health Directorate
Hussein Alaa Jabbar Auda (Medical Student)

Abstract:

Neurogenic bladder is the name given to a number of urinary conditions in people who lack bladder control due to a brain, spinal cord or nerve problem. This nerve damage can be the result of diseases such as multiple sclerosis (MS), Parkinson's disease or diabetes. It can also be caused by infection of the brain or spinal cord, heavy metal poisoning, stroke, spinal cord injury, or major pelvic surgery. People who are born with problems of the spinal cord, such as spina bifida, may also have this type of bladder problem. Causes of neurogenic shock is usually a spinal cord injury. When the nerves in the spinal cord are damaged, they stop sending messagesto the nerves that control other functions in the body. If nerve signals to the musclesin the blood vessels are shut down, the vessels stop working properly. Neurogenic bladder affects people with stroke and Parkinson's disease and many other types of nervous system conditions. Conditions that damage nerves like advanced diabetes can also cause neurogenic bladder.

Methods:

Study design : Descriptive , Cross -sectional study, Study patterns : Retrospective study
Place & Time of study : The study took place in Thi Qar governorate , study begun at 2nd of April 2023 and ended at 6th of May 2023
Study Population : The population of Thi Qar about 2 million , The study included the students and staff from Thi Qar University, children younger than 18 and elderly above 80 were excluded.

Analysis :

Qualitative data had been analyzed by using SPSS (statistical package for social science) , were Reliability , frequency , percentage and chi square had been calculated

Results:

A 55 patients suffer from neurogenic bladder, were recruited in this study that focus on different aspects of assessment, that include their socio-demographyclinical character that scored according to Binned score

Introduction

Definition:

Neurogenic bladder is the name given to a number of urinary conditions in people who lack bladder control due to a brain, spinal cord or nerve problem. This nerve damage can be the result of diseases such as multiple sclerosis (MS), Parkinson's disease or diabetes. It can also be caused by infection of the brain or spinal cord, heavy metal poisoning, stroke, spinal cord injury, or major pelvic surgery. People who are born with problems of the spinal cord, such as spina bifida, may also havethis type of bladder problem.

Nerves in the body control how the bladder stores or empties urine, and problems with these nerves cause overactive bladder (OAB), incontinence, and underactive bladder (UAB) or obstructive bladder, in which the flow of urine is blocked..

The urinary bladder stores urine until the micturition reflex is triggered. It is included within the anterior pelvic compartment. The mass peristaltic movement of the bladder, which leads to micturition, is caused by the contraction of the detrusor muscle, the smooth muscle of the urinary bladder, whose muscle fibers extend in all directions, which, when contracted, can increase the pressure in the bladder up to 40 to 60 mm Hg. The urinary bladder is supplied by the vesical plexus of nerves, which is made up of fibers generated by the inferior hypogastric plexus. Each of thesympathetic and parasympathetic components of the vesical plexus comprises both motor and sensory fibers . Parasympathetic efferent nerve fibers control the detrusormuscle (S2 to S4) and do not supply the pre-prostatic sphincter. If they are lost, regular micturition cannot occur. It is believed that sympathetic efferent fibers (T11to L2) are inhibitory to the detrusor and motor to the pre-prostatic sphincter mechanism. The voluntary sphincter urethra is placed in the urethra's wall and innervated by the somatic pudendal nerve (S2-4).

The parasympathetic and sympathetic nerves carry pain sensations generated by bladder distension or spasm, respectively. In the spinal cord, bladder pain is mediated by the lateral spinothalamic tract, while bladder distension is felt via the

posterior columns. Therefore, bilateral anterolateral cordotomy reduces pain selectively without changing the impression of bladder distension or the urge to urinate. Within the peripheral nervous system, preganglionic axons exhibit significant divergence to form synapses with many

ganglionic targets. In all ganglia, synaptic transmission is mediated by acetylcholine (Ach) acting on nicotinereceptors. One of the most critical steps in micturition is contraction of the detrusor muscle. "The external sphincter muscle is under the voluntary control of the nervous system and can be used to consciously prevent urination, even when involuntary controls are attempting to empty the bladder". Disorders leading to the impairment or malfunctioning of the micturition reflex, which subsequently leads to urinary incontinence, may lead to various adverse psychosocial outcomes. Multiple studies reported the feeling of powerlessness and impairment of engagement in daily activities and social participation.

There are two types of neurogenic bladder dysfunction.

- Overactive bladder causes you to have little or no control over your urination. Itcan also cause you to feel a sudden or frequent need to urinate. (It's also called spastic or hyper-reflexive bladder).

- Underactive bladder occurs when your bladder muscles lose their ability to hold your urine. You're no longer able to sense when your bladder is full or to empty itcompletely, so it over-fills and urine leaks out. (This is also called flaccid or hypotonic bladder).

Symptoms of neurogenic bladder:

Some symptoms is urinary tract infection, leaking Urine ,passing urine often andUrine Dribbles

Risk Factors:

Factors that increase your chance of neurogenic bladder include:

- Nerve or spinal cord conditions present since birth, such as spina bifida or spinal cord tumor
- Diabetes
- Stroke
- Other causes of brain injury such as infection or trauma

Causes of neurogenic shock is usually a spinal cord injury. When the nerves inthe spinal cord are damaged, they stop sending messages to the nerves that control other functions in the body. If nerve signals to the muscles in the blood vessels areshut down, the vessels stop working properly. Neurogenic bladder affects people with stroke and Parkinson's disease and many other types of nervous system conditions. Conditions that damage nerves like advanced diabetes can also cause neurogenic bladder.

Epidemiology:

40% to 90% of patients in the United States with multiple sclerosis (MS), 37% to 72% of patients with parkinsonism, and 15% of patients with stroke. It is estimated that 70% to 84% of patients with spinal cord injuries have at least some degree of bladder dysfunction. Neurogenic bladder is present in up to 98% of children with myelomeningocele. The prevalence of areflexia of the detrusor muscle varies between 13 and 49.5% and hyperreflexia between 25 and 76% .

Diagnosis

-Medical History Bladder Diary Pad Test Physical Exams

-Urine cultures

-Bladder scans

-Cystoscopy

-Urodynamic testing

-Imaging tests such as x-rays ultrasound and/or CT scans

Preventive control strategy

While most cases of neurogenic bladder cannot be prevented, people with diabetes may be able to delay or avoid the problem by carefully controlling their blood sugarlevels over the long-term

Treatment for neurogenic bladder depends on the cause. It is aimed atpreventing kidney damage and may include:

1. Medicines
2. Emptying the bladder with a catheter at regular times
3. Preventive antibiotics to reduce infection
4. Placing an artificial cuff around the neck of the bladder which can be inflated to hold urine and deflated to release it.
5. Surgery to remove stones or blockages
6. Botox injections into the bladder muscle
7. Placement of an electrical device to stimulate or slow down bladder activity

Complication

- Urine leakage often happens when the muscles holding urine in do not get theright message.
- Urine retention happens if the muscles holding urine in do not get the messagethat it is time to pass urine.
- Damage to the tiny blood vessels in the kidney may happen if the bladderbecomes too full and urine backs up into the kidneys. This causes extra pressure and may lead to blood in the urine.
- Infection of the bladder, ureters, or kidneys often results from urine that isheld too long before it's passed out of the body.

Aim of study: In order to study and assess neurogenic bladder in Thi Qar governorate

Methodology:

Type of study : Diagnostic study to assess incidence of neurogenic bladder

- **Study design** : Descriptive , Cross -sectional study
- **Study patterns** : Retrospective study
- **Place & Time of study** : The study took place in Thiqar governate , studybegun at 2nd of April 2023 and ended at 6th of may 2023
- **Study Population** : The population of Thiqar about 2 million , The study includes the students and staff from Thiqar university, children youngerthan18 and elderly above 80 were excluded.
- **Sampling and Sample size estimation** : Sample size is 220 given by the supervisor , collected through Google form – based Questionnaires published in the official websites of colleges of Thiqar University.
- **Ethical Consideration** : Ethical consent had been attained from the scientific committee of community medicine department / College of Medicine / ThiqarUniversity and also from The Associate scientific Dean of the Same College and Finally an written consent was taken from each participant .
- **Definition of Variables :** . Neurogenic bladder is the name given to a number of urinary conditions in people who lack bladder control due to a brain, spinal cord or nerve problem. This nerve damage can be the result of diseases such as multiple sclerosis (MS), Parkinson's disease or diabetes
- **Statistical Analysis** : Qualitative data had been analyzed by using SPSS(statistical package for social science) , were Reliability , frequency , percentage and chi square had been calculated .
- **Epidemiological Analysis** :

$$Total\ number\ of\ new\ cases\ in\ a\ given\ place\ and\ time$$

$$incidence = \frac{}{p\ o\ p\ ulation\ at\ risk}$$

Results:

A 55 patients suffer from neurogenic bladder, were recruited in this study with focus on different aspects of assessment including their socio-demography, clinical character that scored according to Binned score.

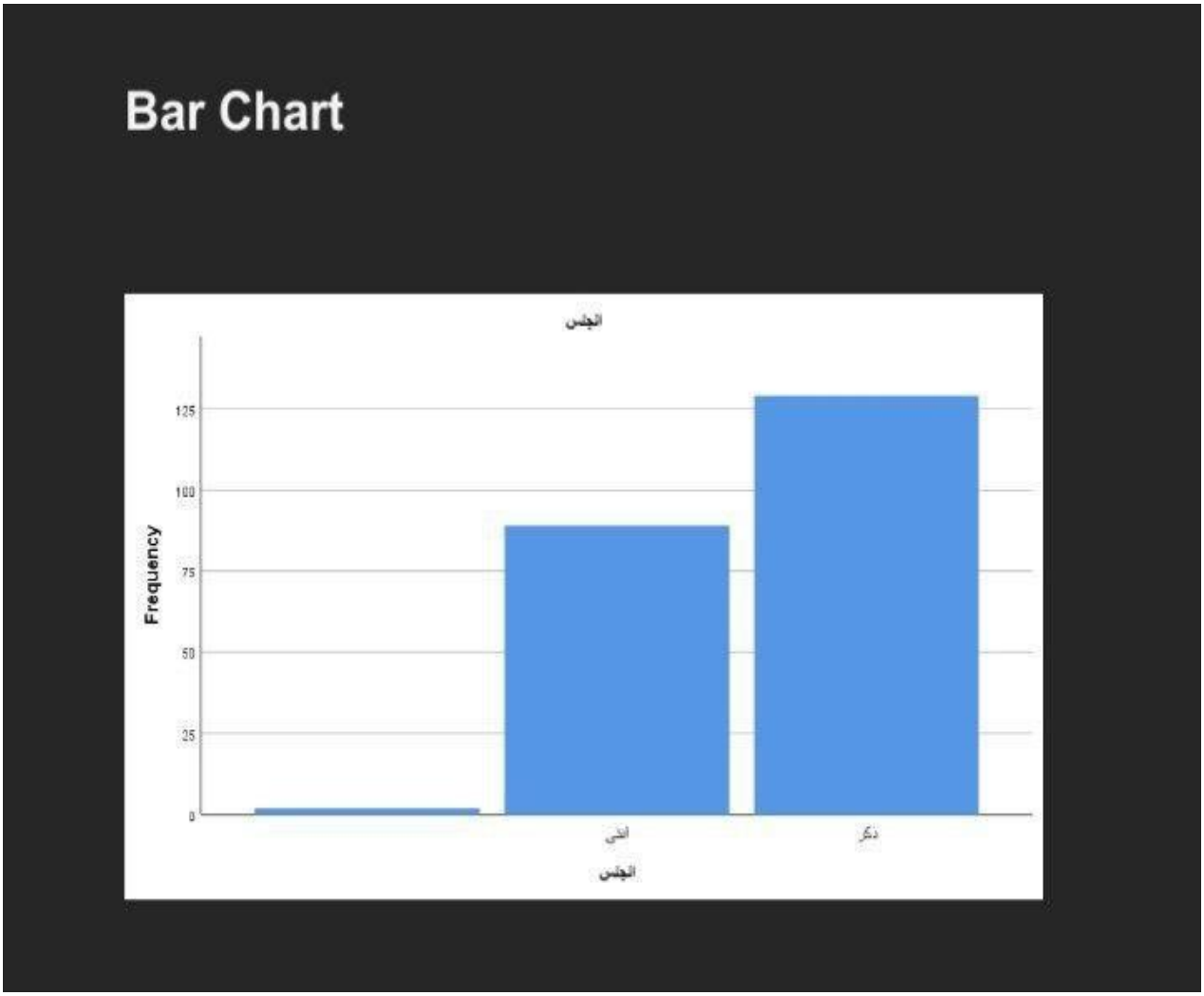

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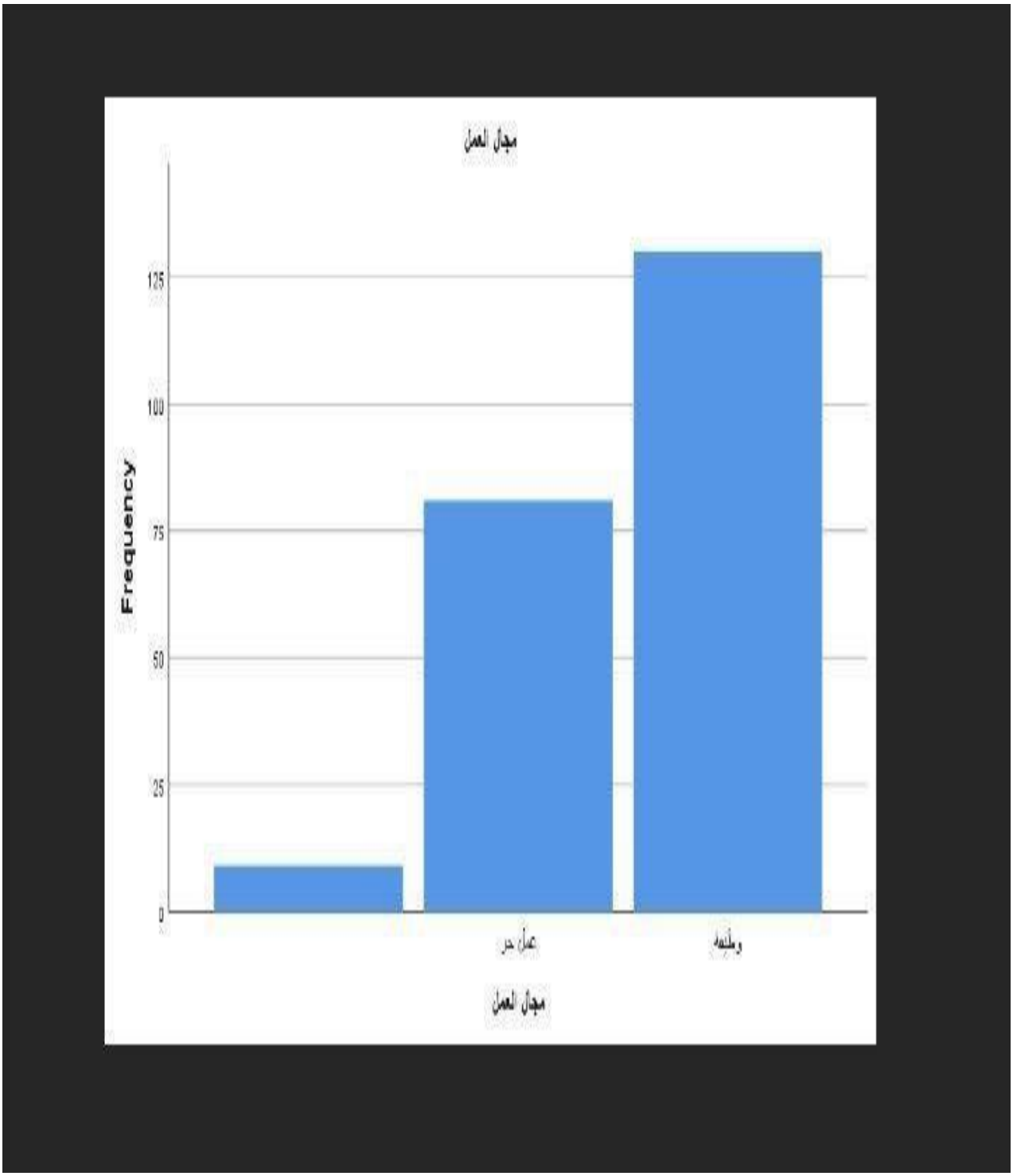
Figure (1); This bar chart shows a correlation between males at higher percentage todevelop neurogenic bladder (gender)



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Figure(2); This chart bar shows an occupational variation of developing neurogenic bladder.

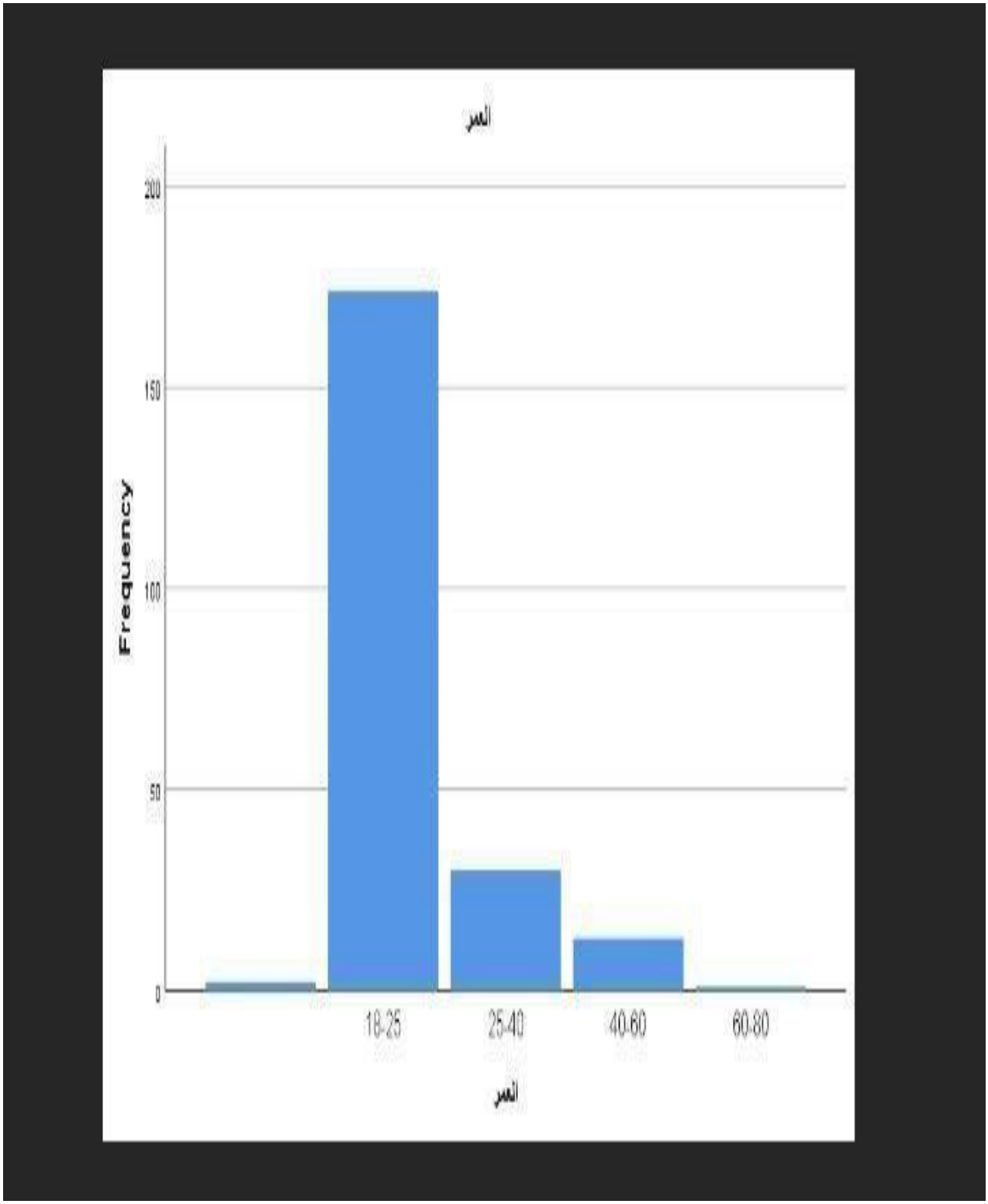
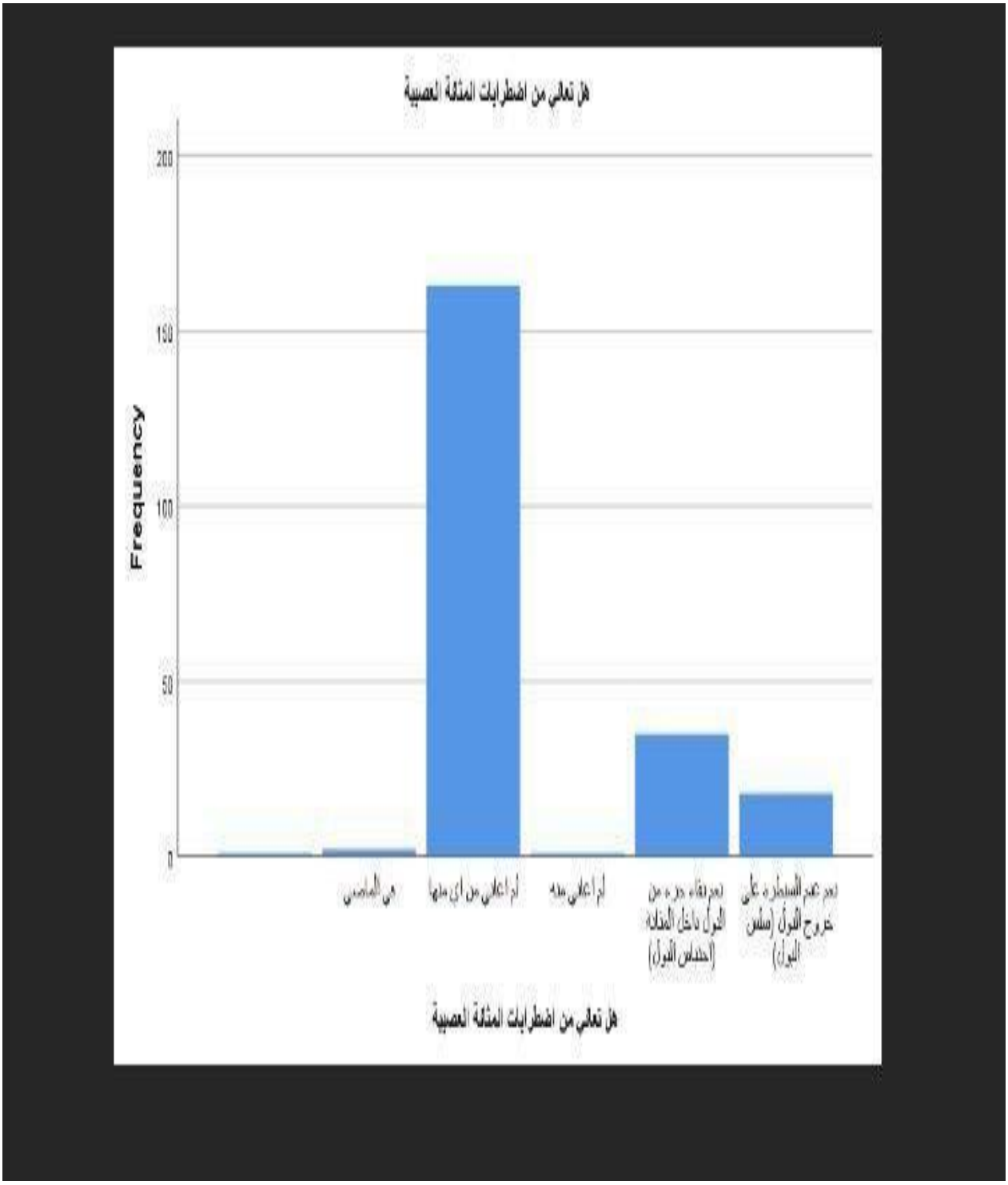


Figure (3); This chart bar shows the highest percentage of developing neurogenic bladder at age of 18-25, since the lowest at late adult.



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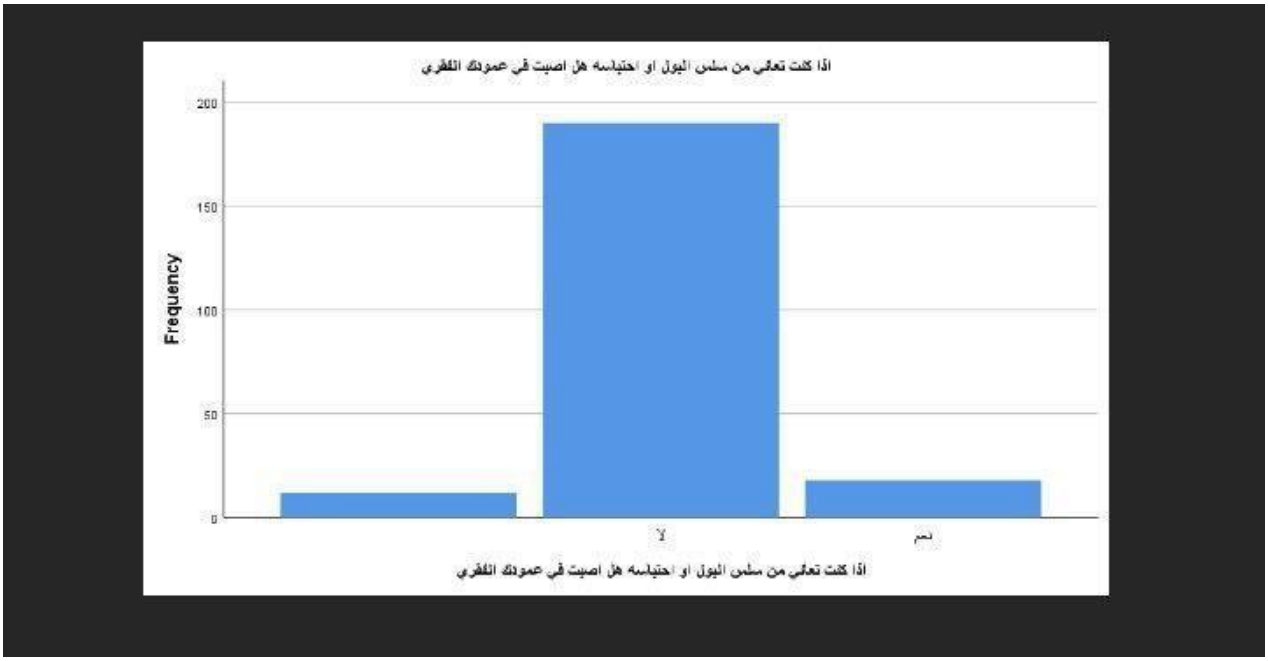
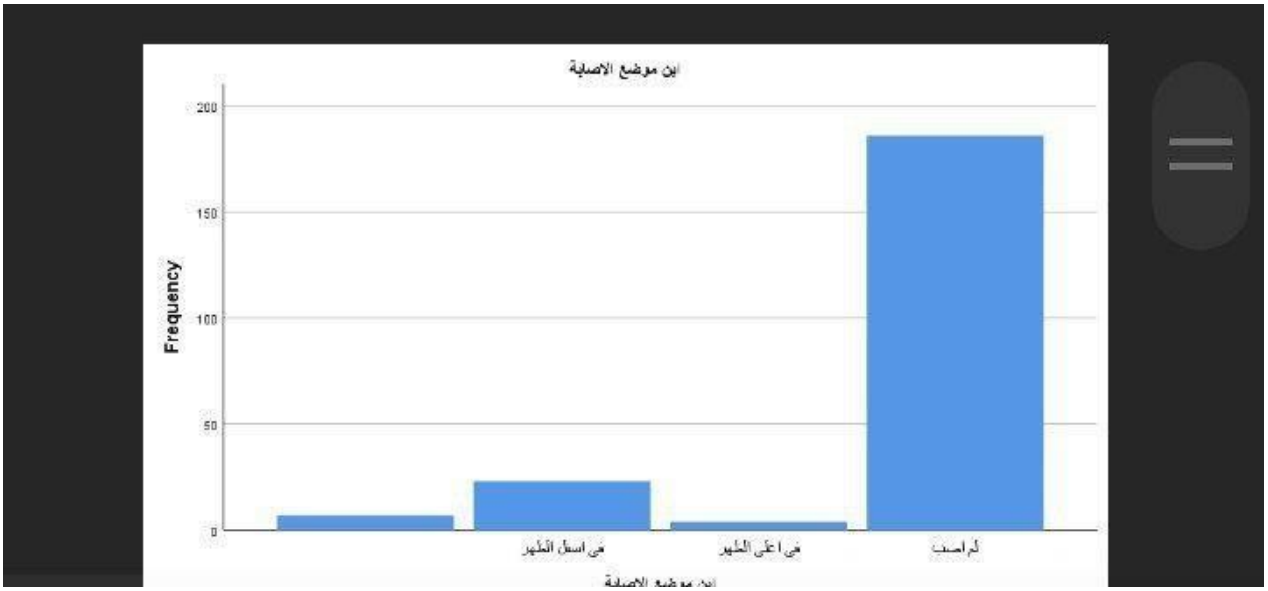
Figure(4); This bar chart shows the majority of cases don't complain from sequelue of neurogenic bladder, whitest to a lesser extent complain from urine retention or urinary incontinence.



Figure(5);This chart bar shows the majority of cases don't receive a trauma tosacral region irrespectivly to the level of injury.



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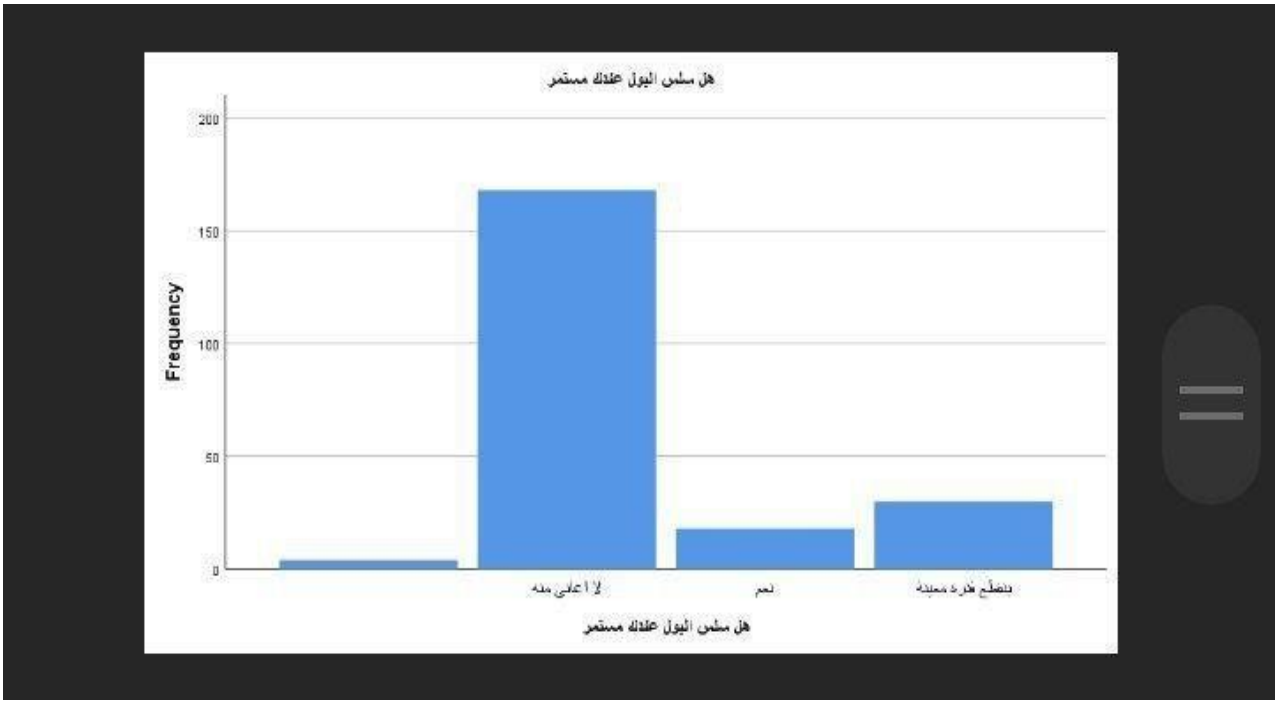
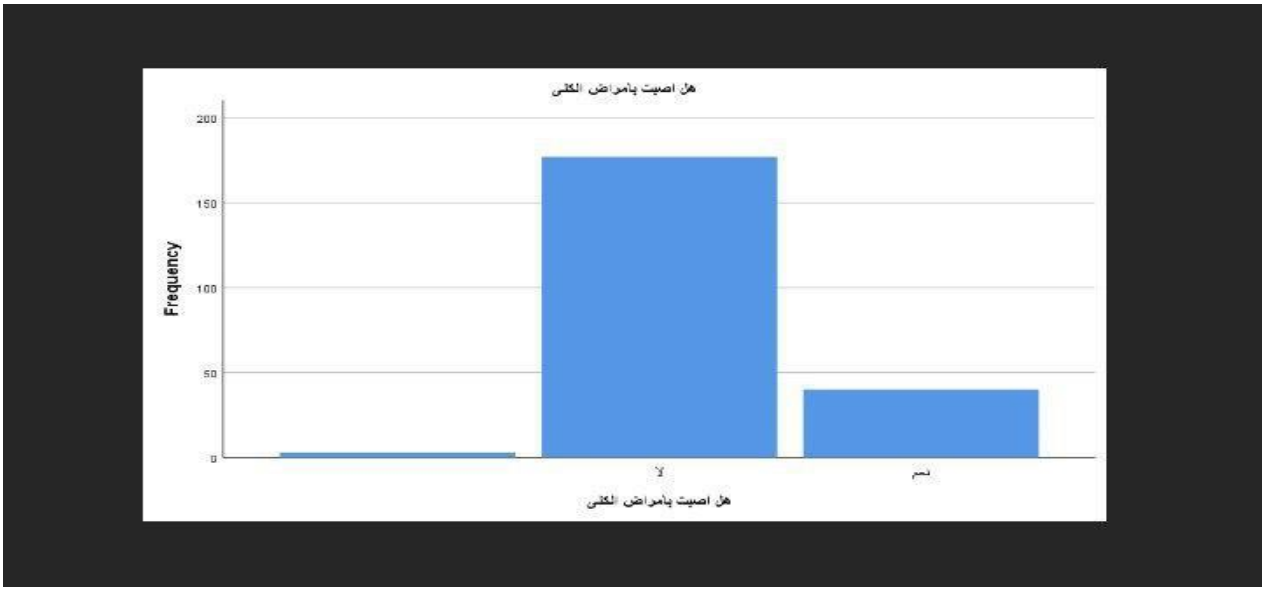
Figure(6); Minority of cases received a trauma to the lower back, as mightcomplained from flaccid bladder.



Figure(7); Majority of cases don't complain from urinary incontinence



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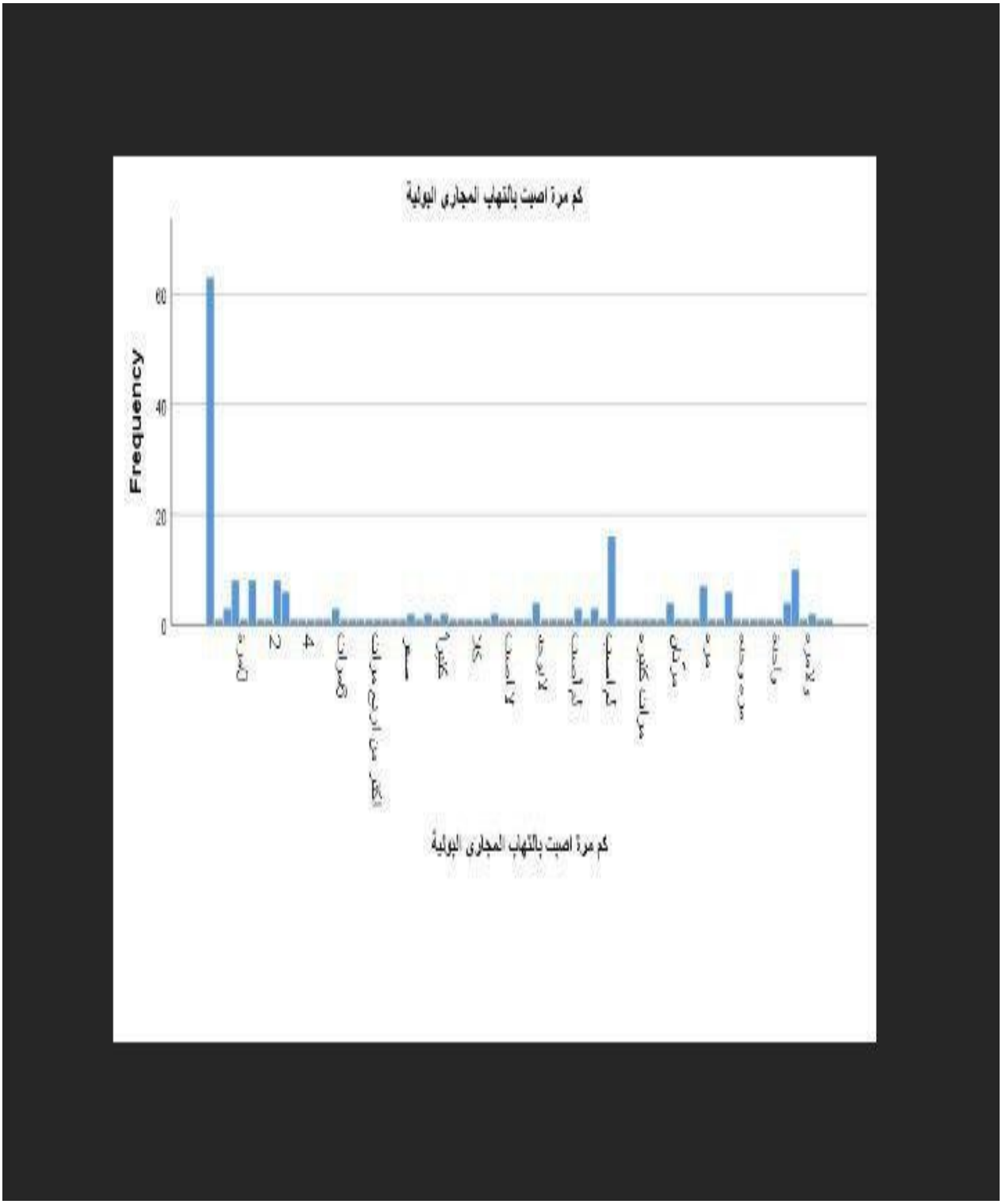
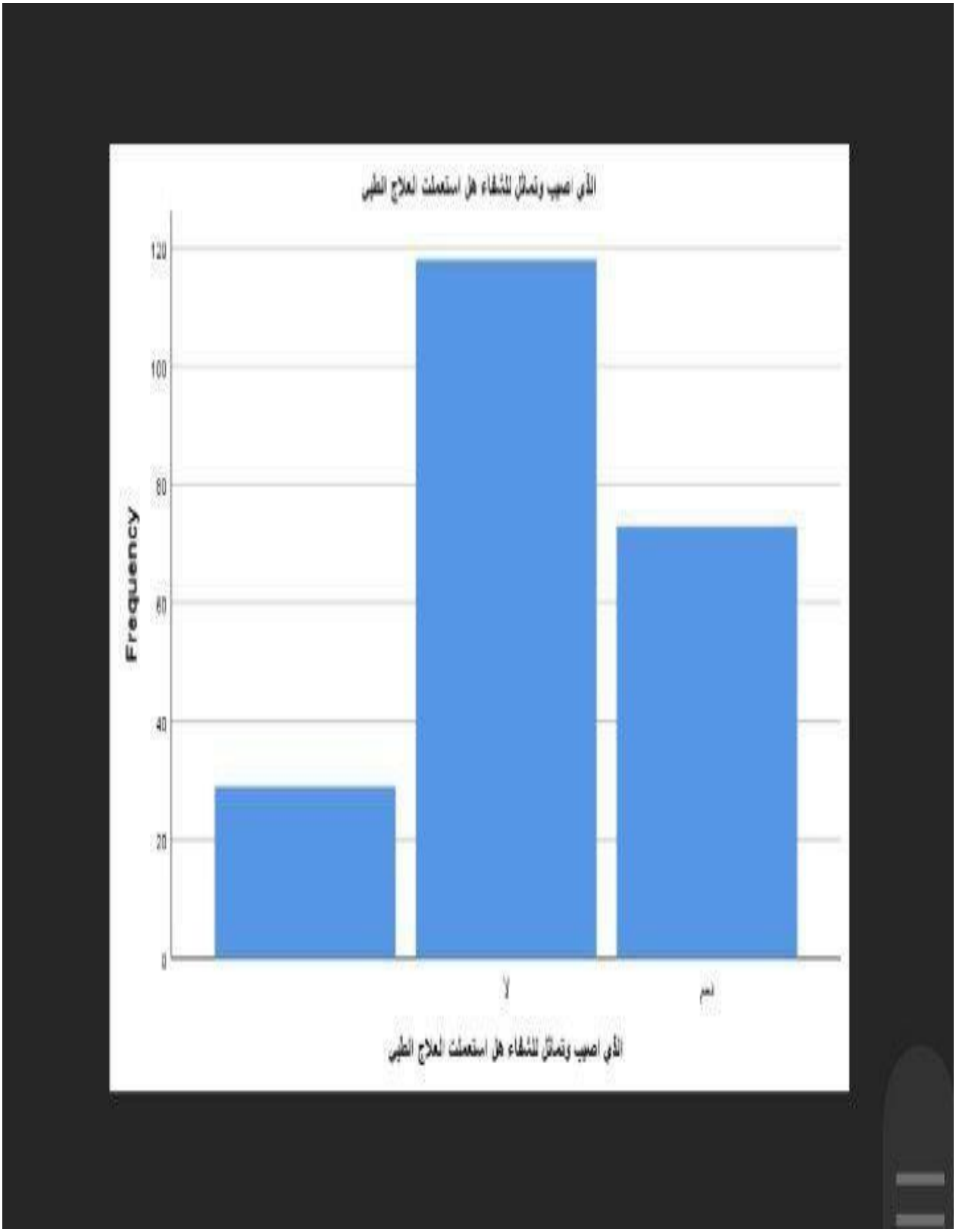
Figure(8);This bart chart might show a slight correlation between neurogenic bladder and kidney disorders



Figure(9);This bar chart shows a variation in periodic of getting UTI.



Figure(10);This chart bar shows some cases relived by medical intervention, while others might need a surgical approach to relive the symptomsand it's social interfere.

Discussion:

Lower urinary tract dysfunction is a common sequel of neurological disease resulting in symptoms that significantly impacts quality of life. The site of the neurological lesion and its nature influence the pattern of dysfunction. The risk for developing upper urinary tract damage and renal failure is considerably lower in patients with slowly progressive nontraumatic neurological disorders, compared with those with spinal cord injury (sacral). The difference is considered when developing appropriate management of neurogenic bladder. In selected patients, reconstructive urological surgery may become necessary. An individualized, patient -medical approach is required for the managementof lower urinary tract dysfunction in this special study.

Most studies in Iraq and outside Iraq agree with the results of our study and all studies recommend early diagnosis and early treatment to prevent irreversible damage of renal parenchyma and subsequently renal failure.

Conclusions:

Management of neurogenic bladder depends on the underlying cause and is applied accordingly. Early diagnosis is mandatory and early treatment is crucial to prevent irreversible damage of renal parenchyma and subsequently renal failure.

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