

# Assessment of Patient's Knowledge about Avoidance of Recurrent Urolithiasis

## تقييم معارف المرضى حول منع تكرار حصى المسالك البولية

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الخلاصة :

**هدف الدراسة:** لتقييم معارف المرضى حول منع تكرار حصى المسالك البولية.

**المنهجية :** دراسة وصفية أجريت في مستشفى الكندي في مركز تفتيت الحصى للمدة من 15 تموز 2013 إلى 20 آب 2014. واختيرت عينة غير احتمالية (غرضية) من (100) مريض مصاب بحصى المسالك البولية ممن يراجعون مركز تفتيت الحصى في مستشفى الكندي التعليمي من عمر (18) سنة فأكثر. جمعت المعلومات من خلال استبانة مصممة و مكونة من جزأين الجزء الأول شمل الصفات الديموغرافية الاجتماعية ويحتوي (6) فقرات والجزء الثاني وشمل العوامل المساهمة في تكرار حصى المسالك البولية ويحتوي (43) فقرة. حددت ثباتية استمارة الاستبانة من خلال إجراء الدراسة المصغرة و حددت مصداقيتها من خلال عرضها على (12) خبير. تم وصف وتحليل البيانات باستخدام أساليب الإحصاء الوصفي والاستنباطي من خلال الحقيبة الإحصائية (SPSS) النسخة (10).

**النتائج:** أظهرت نتائج الدراسة أن هناك ضعف في معارف المرضى المتعلقة بكيفية تكوين الحصى وتركيبها والعوامل المساعدة في تكرار حدوث الإصابة بالنسبة للغذاء، شرب السوائل، التاريخ العائلي والطبي، الحركة والفعاليات الجسمية، وكثرة تناول الأدوية المسببة للحالة. **الاستنتاج:** استنتجت الدراسة إن الإصابة بحصى المسالك البولية شائعة الحدوث في الذكور أكثر من الإناث وأن غالبية المرضى من المتزوجين ذوي الدخل المحدود ولديهم تاريخ عائلي للمرض بالإضافة إلى ذلك، أعطت الدراسة مؤشرا على إن قلة شرب السوائل وكثرة تناول الأغذية الغنية بالكالسيوم، الأوكزلات، البروتين، قلة التمارين الرياضية والتاريخ العائلي للمرض هي أكثر الأسباب المؤدية إلى تكرار حصى المسالك البولية.

**التوصيات:** أوصت الدراسة بضرورة وجود وحدة خاصة في ألردهات البولية في كل المحافظات لتزويد المرضى بالمعلومات والإرشادات لتجنب تكرار حصى المسالك البولية وتزويد المرضى بكتيب عن العوامل المساعدة في تكرار الحصى.

### Abstract:

**Objectives :** To assess the patient's knowledge about avoidance of recurrent Urolithiasis, and to identify the relationship between some variables (age, gender, level of education) and patient's knowledge.

**Methodology:** a descriptive quantitative study is carried out at Al- kindy teaching hospital from 15<sup>th</sup> July 2013 to 20<sup>th</sup> August 2014. A non-probability (Purposive sample) of (100) patient's with Urolithiasis who attended to Extra Corporal Shock Wave Lithotripsy (ESWL) department within (18) years and more. The data are collected through the use of semi-constructed questionnaire, which consists of two parts (1) Sociodemographic data form that consist (6) items, (2) factors contributed to recurrent urolithiasis consist (43), by means of direct interview technique with the Urolithiasis patients. Reliability of the questionnaire is determined through a pilot study and the validity through a panel of (12) experts. The data were described statistically and analyzed through use of the descriptive and inferential statistical analysis procedures.

**Results:** The findings of the present study indicate that the patients have poor knowledge about stone formation and composition, and the factors contributed to stone recurrence about life style related to diet, fluid intake, family and medical history, physical activities, medication intake.

**Conclusion:** The study concludes that stone disease more common in male than female, the most of them were married and low economic status and have family history of urinary stone, also the study concluded that the decrease fluid intake, increase( calcium, oxalate, protein) diet, decrease physical activities, medication intake are the essential cause of Urolithiasis.

**Recommendations:** The study recommends that all urological departments in hospitals in every governorate in Iraq should include instructional division about the avoidance of recurrent urolithiasis, provide patients with a booklet about the risk factors of recurrent Urolithiasis.

**Key words:** Assessment, Recurrent, Urolithiasis

## INTRODUCTION

Urinary stone is an increasing disease due to the changes in nutritional behavior and in the general life style. Urolithiasis is manifested by the repeated medical symptoms and potential cause of structural harmful of the renal and of the urinary system in addition to the potential enhance in systemic blood pressure. Furthermore, numerous need for medical treatment and invasive urological procedures increase the patient's exposure to adverse effects of these managements<sup>(1)</sup>. Stone disease is one of the major ordinary urological diseases, with an incidence between 5% to 10%, usually stirring in people with (30 – 60) years of age. In most of urolithiasis persons, the situation and its outcomes are not grave, while affliction the illness could be lead to morbidity, a stay in hospital and time missing from every day labor. in addition to, about 50% of every patients with urinary stones have been expected frequent stone development<sup>(2)</sup>. Stone disease is an ordinary disarray that affects about 3-5% of the population and is typically linked with metabolic disorders<sup>(3)</sup>.. Although together inherent and environmental factors assist to urinary calculi development, the main reason is not completely well-known<sup>(4)</sup>. further accurate information concerning the stone formation risk factors may improve in avoidance of Urolithiasis<sup>(5)</sup>. To realize which lifestyle components these could be, it assists to identify the essential reasons for stone development. Stones can only appearance when the urine supersaturated with the stone-forming substances than can be dissolved in urine <sup>(6)</sup>. reappearance of urinary stone is familiar and consequently persons with stone disease should be instructed to adjust amount of lifestyle events which will assist to avoid or interruption urolithiasis repetition <sup>(7)</sup>. The entire fee of an event of Urolithiasis was expected at €4,267 involving the expenditure of management and complications. This be in agreement to an yearly finances impact of €88 million for repeated stones founded on 21,000 stone events. Supposing 100% observance the instructions of fluid intake of 2 L daily, 11,572 another stones formation might be avoided, this would be save about €49 million <sup>(8)</sup>. The rate of stone recurrence in several groups post the initial stone has been shown that is up to 70% after 20 years of follow-up, and 50% of whom will occur earlier than 5 years <sup>(9)</sup>. It has been notify that in the Arabian gulf countries ( Kuwait, United Arab Emirates (UAE) and Saudi Arabia),the incidence of Urolithiasis up to ( 20%) of the men would have had one or more urinary stone disease when they at( 60) years of age <sup>(10)</sup>. Many kinds of Urolithiasis that vary in their chemical structure and pathogenesis. The most wide speared type of urinary stone is formed of calcium oxalate and is related to metabolic abnormalities that are mostly can be treated <sup>(11)</sup>.Urolithiasis is formation of stone at any place of urinary system. It is probable that 12% of world people gets stone disease with a reappearance rate of 70-80% in men and 47-60% in women <sup>(12)</sup>. Urolithiasis frequently result from a mixture of multifactor reasons, rather than only, single clear cause. Stones are more widespread in persons whose intake rich animal protein diet or who do not drink sufficient fluid or high calcium diet<sup>(13)</sup>. Urinary stones influence all environmental, educational, and ethnic groups. The probability of getting urinary stone disease is about 10 to 15% in the urban world, this percentage increase up to 20 to 25% in the east countries. The greater risk of dryness in high temperature environment, joined with diet 50% less in calcium and 250% elevated in oxalates in comparison with Western diets, computations for the elevation possible risk in the East <sup>(14)</sup>.

## OBJECTIVES OF THE STUDY:

- 1- To assess the patient's knowledge about avoidance of recurrent Urolithiasis.
- 2- To identify the relationship between some variables (age, gender, level of education) and patient's knowledge

## METHODOLOGY:

**Study Design:** A descriptive quantitative study is carried out at Al- kindy teaching hospital from July 15<sup>th</sup> 2013 to 20<sup>th</sup> Jan 2014. **Study Sample** A non-probability (Purposive sample) of (100) Urolithiasis patients, who attended to Extra Corporal Shock Wave Lithotripsy (ESWL) department within (18) years and more. A purposive sample of 100 individuals (68 men, 32 women), all of them are diagnosed with Urolithiasis.

**Instruments** the use of semi-constructed questionnaire, which consists of two parts, first part Sociodemographic data form that consist (7) items, second part factors contributed to recurrent urolithiasis consist (43), by means of direct interview technique with the Urolithiasis patients.

**Data collection** The data were collected through the utilization of the developed questionnaire and by means of structured interview technique **Data Analyses** In order to achieve the objectives; the data of the study were analyzed through the use of statistical package of social sciences (SPSS) version 10 through descriptive and inferential statistical analyses.

## RESULTS

**Table1. Distribution of study sample by their Socio-Demographic Characteristics no=100**

Variables	Groups	F	%
Age Groups (Per years)	20 – 29 years	19	19.0
	30 – 39 years	18	18.0
	40 – 49 years	15	15.0
	50 – 59 years	27	27.0
	60-69 years	21	21.0
Gender	Male	68	68.0
	Female	32	32.0
Level of education	Read and Write	38	38.0
	Primary School Graduate	22	22.0
	Intermediate School Graduate	17	17.0
	Preparatory School Graduate	10	10.0
	Institute Graduate	13	13.0
	College Graduate or Above	0	0
Occupation	Employee	14	14.0
	Retired	27	27.0
	Self-employed	29	29.0
	Housewife	22	22.0
	Unemployed	8	8.0
	Total	100	100

This table demonstrate that the most of the study sample (27%) were at (50-59) years of age and (68%) of them were male, (38%) were read and write and (29%) were self-

**Table 2. Distribution of study sample according to times of recurrence and family history**

Variable		F	P
Recurrent urolithiasis	First time	58	58.0
	Second time	42	42.0
	Third time	0	0.0
Family history	Total	100	100.0
	yes	62	62.0
	No	38	38.0
	Total.	100	100.0

This table indicate that the (58%) of the study sample have first episode of Urolithiasis, and (62%) of them have family history of Urolithiasis

**Table (3). Distribution of study sample by their body mass index**

		Control	
		Frequency	Percent
Body mass index	normal weight	21	21
	overweight	38	33%
	Obese	41	41%
Total		30	100.0

This table shows that (41%) of the study sample were at critical bound of obese status

**Table (4) Patient's response toward knowledge related to fluid and beverage intake**

No.	items	M.S	S.D	R.S	Ass.
1-	Drink plenty of fluid in hot weather situation and intense sweating and doing great work or while doing exercise.	2.2000	.10684	67.33	P
2-	The use of ventilation and replace lost fluids if the business for a long time in hot areas such as kitchen and oven	1.2333	.43018	41.11	F
3-	Drinking a large amount of fluid in case of fever and severe diarrhea	1.1667	.37905	38.39	F
4-	Drink water before going to sleep or when the advancement of the night and when you wake up at morning by a one or two cups	1.1333	.34575	37.77	F
5-	Taking adequate amounts of fluids with and between meals	1.2000	.40684	40	F
6-	Decrease drinking cola beverage such as Pepsi cola coca cola	1.1000	.30513	36.66	F
7-	Decrease stimulants drinking such as tea, coffee and cocoa	1.1667	.37905	38.39	F
8-	Increase juices intake like orange juice, lemon juice citrus	1.1667	.37905	38.39	F
9-	Cranberry juice intake which prevent bacteria causing urinary tract infection	1.1667	.37905	38.39	F
10-	Avoid drinking alcohol	2.1333	.14575	37.77	P
11-	Don't drink water from unhealthy resource such as rivers, wells, and ponds	1.2000	.40684	40	F
12-	Check the amount of urine output which must not be less than (2.5)liter/24 hours	2.1667	.17905	67.33	P
13-	Start urination as soon as feeling that and do not lock up the urine for a long time in the bladder, it helps to build-up and accumulation of mineral salts in all parts of the urinary system	1.1667	.37905	38.39	F
14-	24 hours urine collection after removing stones to detect the urine volume, PH, calcium, oxalate, uric acid	1.2000	.40684	40	F

M.S: Mean of score, R.S: Relative sufficiency percentage, S.D: stander Deviation, Ass: Assessment, F:failuar under cutoff point 2 i.e. R.S.=66.66).

This table shows that Urolithiasis patients have poor knowledge about fluid and beverage intake in all items except in item (Drink plenty of fluid in hot weather situation and intense sweating and doing great work or while doing exercise.), and (Check the amount of urine output which must not be less than (2.5) liter/24 hours)

**Table 4 patient's response toward knowledge related to dietary intake**

No.	Items	M.S	S.D	R.S	Ass.
1-	Reducing the intake of animal protein-rich foods such as red meat (beef, sheep meat)	1.1667	.37905	38.89	F
2-	Decrease white meat intake such as (chicken, fish)	1.2000	.40684	40	F
3-	Eat limited amounts of foods rich in vegetable protein (beans, Homs), lentils).	1.1333	.34575	37.77	F
4-	Intake little amounts of milk and dairy products	1.0667	.25371	35.55	F
5-	Avoid Eating food rich in calcium (yogurt, dried figs, salmon, okra, chickpeas, milk and dairy products)	1.1000	.30513	36.66	F
6-	Decrease eating Oxalate rich diet such as (Sudan beans, wheat, almonds, hazelnuts, soy, spinach, chocolate, potatoes, chickpeas)	1.1000	.30513	36.66	F
7-	Avoid eating refined sugars that stimulate the secretion of insulin, which in turn leads to put large amounts of calcium in the urine	1.1333	.34575	37.77	F
8-	Increased intake of foods rich with vitamin (a) Kalmhamsh peach and pumpkin Aldzro	1.1000	.30513	36.66	F
9-	Avoid increased intake of fresh fruit and vegetables or juices (when the case be genetic stones) because it raises the acidity of urine and thus help to form <i>urinary stones</i>	1.2000	.48423	40	F
10-	Reduce the intake of table salt. Increased sodium intake increases the risk of formation of gravel. By increasing the levels of calcium and reduce the level of citrate in the urine	2.1667	.16113	38.89	P
11-	Avoid excessive intake of calcium and vitamin "D" tablets, especially after the age of menopause	1.2000	.48423	40	F
12-	Avoid eating fatty substances or cooked in fat	2.2000	.18423	67.33	P

M.S: Mean of score, R.S: Relative sufficiency percentage, S.D: stander Deviation, Ass: Assessment, F:failuar under cutoff point 2 i.e. R.S.=66.66).

This table reveals that the Urolithiasis patients have not adequate knowledge of the risk factors of urinary stone related to dietary intake in all items except in items (Reduce the intake of table salt. Increased sodium intake increases the risk of formation of gravel. By increasing the levels of calcium and reduce the level of citrate in the urine) and (Avoid eating fatty substances or cooked in fat)

**Table (5) patient's knowledge related to medical past history risk factors**

No.	Items	M.S	S.D	R.S	Ass.
1-	Hyperparathyroidism	1.2000	.40684	40	F
2-	Gout	1.2000	.40684	40	F
3-	Recurrent urinary tract infections	1.2667	.44978	42.22	F
4-	Chronic dehydration	1.2333	.43018	41.11	F
5-	Prolong catheterization	1.2000	.40684	40	F
6-	Hypertension	1.2333	.43018	41.11	F
7-	Diabetes	1.1667	.37905	38.39	F
8-	Crohn's disease	1.2333	.43018	41.11	F

M.S: Mean of score, R.S: Relative sufficiency percentage, S.D: stander Deviation, Ass: Assessment, F:failuar under cutoff point 2 i.e. R.S.=66.66).

This table reveals that the Urolithiasis patients have not adequate knowledge of the risk factors of urinary stone related to past medical history in all items.

**Table (6) patient's knowledge related to movement and physical activities**

No.	Items	M.S	S.D	R.S	Ass.
1-	Prolonged immobility in the bed in case of fractures and heart diseases	1.1667	.37905	38.89	F
2-	Sleeping on one side without changing position	1.2333	.43018	41.11	F
3-	Prolonged sitting without movement	1.2000	.40684	40	F
4-	Lack of exercises	2.2333	.13018		

M.S: Mean of score, R.S: Relative sufficiency percentage, S.D: stander Deviation, Ass: Assessment, F:failuar under cutoff point 2 i.e. R.S.=66.66).

This table reveals that the Urolithiasis patients have not adequate knowledge of the risk factors of urinary stone related to movement and physical activities in all items accept item(Lack of exercises).

**Table (7) patient's response toward knowledge related to medication intake**

No.	Items	Pre-study			
		M.S	S.D	R.S	Ass.
1-	Increase anti acid medication intake	1.1667	.37905	38.39	F
2-	Anti convulsive drugs and migraine	1.2667	.44978	42.22	F
3-	Diuretic drugs	1.2333	.43018	41.11	F
4-	Aspirin and aspirin products	1.2000	.40684	40	F
5-	Chemotherapy In cancer diseases	1.2000	.40684	40	F

M.S: Mean of score, R.S: Relative sufficiency percentage, S.D: stander Deviation, Ass: Assessment, F:failuar under cutoff point 2 i.e. R.S.=66.66).

This table reveals that the Urolithiasis patients have not adequate knowledge of the risk factors of urinary stone related to medication intake in all items

## DISCUSSION

The findings of the study shows that most of the sample(27%) were at (50-59) years old, these findings agree with Ansari & Gupta ( 2003 ) who mentioned that a Urolithiasis prevalence of male greater than female can be noticed with an major occurrence between the fourth and fifth decade of life<sup>(15)</sup>. The study reveals that (68%) of the study sample were male ,these results supported by Soller (2004 ) who stated that the occurrence of urolithiasis is more common in male than female by the ratio of 1.3<sup>(16)</sup>. Regarding to level of education the study demonstrate that (38%)of the study sample were read and write , this mean the most of

patients were in low level of education, Patient level of education play important role in identify the risk factors for recurrent urinary stone and preventive measures for stone formation ( Researcher ). In relation to times of recurrent (58%) of the sample have first time recurrence, Avinash et. al ( 2010 ) stated that many patients will be experienced a numerous stones during their age, with expected return rates of half of them within 5–10 years and 75% within 20 years<sup>(17)</sup>. About body mass index the result reveals that (41%) of the sample were at critical bound of obese status, This result similar to those of Ross & McGill ( 2006 ) who stated that the increasing of body weight can be a source of the rising numbers of patients with Urolithiasis. Persons with central adiposity or high waist-to-hip ratios have the great risk<sup>(18)</sup>.

Regarding to fluid and beverage intake the results indicates that the patients have poor knowledge about fluid and beverage intake, this result agrees with Curhan et. al. (2004) who stated that more watery drinking to form 2 liters/day of urine is one of the most significant and the low coast form of conventional procedure to decrease stone-reappearance<sup>(19)</sup>. Its credible that large quantity of fluid intakes should lead to an increased volume and decrees concentration of urine and increased rate of urination and decrease urinary super saturation, so reducing the salts crystallization and stone development<sup>(20)</sup>.

The findings of the study demonstrated that the patent's knowledge was poor about dietary risk factors of Urolithiasis. Dietary planning is the best protective measure against Urolithiasis by itself it may not replace the surgical intervention but may certainly assist in diminishing the reappearance rate of urolithiasis. Dietary intake plays a vital role in the management of stone diseases. Diet can affect the etiology, treatment or avoidance of return of Urolithiasis because dietary substance and watery intake impact the quantity, pH and the amount of minerals in the urine, the dietary composition influence the biochemical substances such as oxalate, uric acid, calcium and sodium etc. therefore, quantity in addition to quality dietary modulation particularly for oxalate, animal protein, and minerals may the probability of recurrent stone formation<sup>(21)</sup>. The results shows that there is a lack in patient's knowledge toward past medical history, type 2 diabetes, high body weight, and increase blood pressure are related with Nephrolithiasis, specially diabetes may be a reason in the formation of uric acid stones. Insulin resistance, sign of the metabolic syndrome and type 2 diabetes, leads to decrease urine pH and<sup>(22)</sup>. P eople who are risky to continual dryness caused by high environmental temperatures, great physical effort work and inadequate substitution of fluid losses have a mainly increase frequency and occurrence of urolithiasis<sup>(23)</sup>. Urinary tract infection caused by bacteria has a significant responsibility in the creation of stone disease; continual infection of the Urinary tract with bacteria may be the primary cause of the

production of struvite stones<sup>(24)</sup>. In relation to movement and physical activities the findings shows that the patient's knowledge immobility risk factor for Urolithiasis is very poor , this agree with Muhbes ( 2012 ) who stated that Urolithiasis is associated with movement and physical activities, total prolonged immobility and decrease of activities may be contributed to urinary stone development<sup>(25)</sup>. Concerning to medication intake the finding concluded that there is a lack in the patient's knowledge related to medication intake, a variety of medication that enhance the development of stone formation such as Decongestants: ephedrine, guaifenesine. Diuretics: triamterene. Protease inhibitors: indinavir. Anticonvulsants: felbamate, topiramate, triamterene (Dyrenium) and the sulfonamides, which have low solubility. Calcium and vitamin D supplements lead to hypercalciuria<sup>(11)</sup>,

## CONCLUSION:

The study concludes that stone disease more common in male than female, the most of them were married and low economic status and have family history of urinary stone, also the study concluded that the decrease fluid intake , increase( calcium, oxalate, protein) diet, decrease physical activities, medication intake are the essential cause of Urolithiasis.

## RECOMMENDATIONS:

The study recommends that

1. All urological departments in hospitals in every governorate in Iraq should include instructional division about the avoidance of recurrent urolithiasis,
2. Provide patients with a booklet about the risk factors of recurrent Urolithiasis.

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