Effect of Self-Acupressure on k3 Point on Urinary Leakage during Pregnancy

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Abstract

Background: Women all over the world experience urinary incontinence, which could be physically or mentally upsetting as well as burdensome for the person and society especially during pregnancy. **Aim**: the study aimed to evaluate the effect of self-acupressure on k3 point on urinary leakage during pregnancy. **Design**: Quasi experimental research design was utilized to conduct the current study. **Setting**: It was conducted at Damnahur Medical National Institute, in the Obstetrics and Gynecology department. **Sample**: purposive sample of 100 pregnant women. **Tools**: Tool I: Structured interviewing questionnaire Tool II: RUIS Questionnaire **Results**: There was statistically significant difference between pre & post intervention regarding total score of RUIS questionnaire. **Conclusion**: Self acupressure on k3 point was effective in relieving severity of urinary leakage during pregnancy. **Recommendations**: Training Program for nurses about how to use K3 point self-Acupressure as safe, nonaggressive nursing intervention that consumes little time without resorting to pharmacological methods for pregnant women complaining from urinary leakage.

Keywords: Acupressure, urinary leakage, pregnancy .

Introduction

Women all over the world experience urinary incontinence, which could be physically or mentally upsetting as well as burdensome for the person and society.**(Wang etal ,2022)** Urinary leakage refers to any

uncontrollable or abnormal urine loss. Pregnant women are most likely to experience it, which negatively affects their quality of life. Urinary leakage prevalence during pregnancy was 41%, and it raised with gestational age. **(Pavithralochani et al,2019)**

Urinary incontinence (UI) could take a variety of forms, such as occasional urination when coughing or sneezing [stress UI (SUI)], incontinence that is preceded by urgency [urgency UI (UUI)], or a combination of both [mixed UI (MUI)]. **(Moossdorff-Steinhauser et al,2021)**

Anatomical alterations of the pelvic floor, weight of the pregnant uterus, and hormonal

problems all had been proposed as potential causes of UI during pregnancy. **(Rajavuori et al ,2022)**

Age, parity, gestational age, constipation, prior urinary tract infections, body mass index (BMI), pre-pregnancy BMI, and sporadic leaks before pregnancy all are risk factors for

urine leakage during pregnancy. **(Chang et al ,2021)**

Acupressure is a subspecialty of acupuncture that draws its inspiration from Chinese traditional medicine. Acupressure uses touching techniques to balance the body's energy flow, and doctors, nurses, and even patients themselves could employ this technique. (Batvani et al,2018) After explaining the technique, a patient or a specialist could use acupressure as a simple, non-invasive, affordable, and safe treatment. **(Ayça and Derya, 2022)**

Compared to other treatments, acupressure had been shown effective in certain trials to reduce the symptoms of overactive bladder and urine incontinence, improving people's quality of life. There isn't much proof, but it's a beginning. **(Moossdorff-Steinhauser et al,2021)**

Significance of the study

Urinary incontinence is a widespread as a health issue that affects millions of

individuals worldwide, affecting 44-57% of middle-aged females and having an impact on their physical, mental, and social well-being. **(Ramírez et al ,2022)** In Egypt, a survey done in Assuit governorate revealed that 54.8% of women had UI. (**Soliman et al,2020**)
During pregnancy in particular, urinary incontinence was very common.**(DİNÇ ,2017)** Due to physiological changes such as increased abdominal pressure, elevated progesterone levels, and damage to the pelvic floor that occur during pregnancy, urinary incontinence affected more than half of women and peaked in the third trimester.**(wang et al.,2022)**
Therefore, safe and effective non pharmacologic methods like acupressure should be utilised during pregnancy to treat urine leakage. Since acupressure treat urinary incontinence effectively and it hasn't been thoroughly studied.

So this study aimed to implement and evaluate the effect of self-acupressure on k3 point on urinary leakage during pregnancy.

Aim of the study

To evaluate the effect of self-acupressure on k3 point on urinary leakage during pregnancy through the following
1-Assessing prevalence of urinary leakage among pregnant women
2-Implementing k3 point self-acupressure among pregnant women with urinary leakage.
3-Evaluating the effect of k3 point self-acupressure on severity of urinary leakage.

Research Hypotheses:
Self-acupressure on k3 point would have a positive effect on severity of urinary leakage among pregnant women.

Subjects and methods:
Research Design: Quasi-experimental design, involving pre and posttest was used to conduct this study.

Setting:
This study was carried out in the ante natal clinic at Damnahur Medical National Institute, (Damanhour educational hospital), at the Obstetrics and Gynecology department, which is affiliated to the Ministry of Health in Elbehira Governorate, Egypt. This hospital is particularly chosen because it is a major hospital that serves Damanhour city and the surrounding areas. Also, the turnover is satisfactory for the study. Obstetrics and gynecologic department at Damanhour
National Medical Institute include only one antenatal and gynecology clinic in which pregnant women follow up during the antenatal visits.
Subjects:
 Sample:
A purposive sample was used.

Sample size:
The sample consisted of 100 pregnant women.

Sample size calculation:
The sample was calculated using (Epi-info statistical package, version 7.2, designed by the CDC (Center for Disease Control and Prevention) with 80 percent power, a value of 2.5 is chosen at the acceptable limit of precision (D) at 95 percent confidence level (C1), with expected prevalence 10%, worst acceptable 25%. As a result, the sample size was 100 +10%of women to guard against non-response rate.

Inclusion criteria:
•Pregnant women who agreed to participate in the trial and had urinary leakage.
•Those who did not applied acupressure before and those who did not have any psychiatric disorders.

Tools of the study:
Tool no. (1) Structured interviewing questionnaire included.
Part I: Personal data as Name, age, residence, educational level, occupation.
Part II: Obstetrical history as gravida, Para, abortion, gestational age.
Part III: History of risk factors of urinary leakage as coffee or tea consumption, previous perineal injury, previous pelvic surgery etc..

Tool no.(2) Urinary Incontinence Questionnaire.
It consisted of 7 questions related to UI including the RUIS (Revised Urinary Incontinence Questionnaire)
Question no.1 asked the women to self-rate whether they had ever experienced Urine leakage in order to detect presence of UI. The purpose of Question no.2 was used to identify the onset of UI symptoms (before or during pregnancy).

Questions no.3 to 7 (the Revised Urinary Incontinence Questionnaire involved 5 questions) were primarily used to confirm the data obtained in Question no.1(presence of urinary leakage) as well as to determine the severity of UI experienced by the participants.
The RUIS involved questions from both the Urogenital Distress Inventory33 and the Incontinence Severity scale. The first 3 questions pertained to the forms of urinary incontinence, and the last 2 questions pertained to the frequency of urinary incontinence and volume of urine leaked in each urinary leakage episode.
Scoring system
Each question was scored using an ordinal scale, and the total score out of
15 was determined by summing all 5 questions. A score from 0–3 indicated that the patient had no UI or very mild UI symptoms. A score from 4–8 indicated mild UI. A score from 9–12 considered moderate UI, and a score

from 13–16 considered severe UI.
(Mohadyoussef et al, 2018)

Content validity:
Three Staff in the fields of maternity and newborn health nursing and medical surgical nursing evaluated the validity of study tools, and the necessary modifications were made as needed.

Reliability:
Cronbach's alpha reliability test α=92% was used to determine the reliability of study tool and the value of it was .850.

Ethical and legal considerations: the proposal of this study was approved from the Ethics and Research Committee in faculty of Nursing, Damnahur University. An official permission was obtained from the manager of Damnahur Medical National Institute, Obstetrical and Gynecological department.

An oral consent was taken from the participants prior to intervention after guaranteeing anonymity and confidentiality & Full explanation about the nature, aim of the study and benefits all were explained to the participants prior to intervention, also they understand that their participation in the study was entirely voluntary and that they had the right to withdraw at any time .

Pilot study:
The pilot study included 10 women (10%) of the total sample which was recruited to assess the clarity and applicability of the tools, as well to estimate time needed to fill in the study tools, there was no modifications so women in the pilot study were included in the study sample.
Procedure:
The actual fieldwork included preparation, implementation, and evaluation phases of the acupressure protocol. This were completed within

eight months from October 2022 to May 2023.
Preparatory phase
Acupressure point (K3) was chosen as the most effective acupressure point for urinary leakage during pregnancy after examining both domestic and foreign literature to determine the best

acupressure sites for the urinary leakage. It was found and available at https://www.acusansthan-ald.in/one-point acupressure treatment

In order to assist the participants in practising self-acupressure at home, the researcher created a systematic, simple educational guide and videos. It included general details about urinary leaks, an explanation of acupressure and its effects, technique for applying acupressure on oneself, using safety tips, and pictures showing the placement of the k3 acupressure point.

The implementation phase.

Pre intervention phase (Assessment) During the assessment phase, the researcher conducted face-to-face

interviews with the women. During each interview, the researcher explained the study's purpose, nature, and each woman gave her verbal consent to participate in the study. Then, the researcher evaluated personal data, the women's obstetrical history, history of risk factors for urinary leakage, and perform the pretest RUIS questionnaires.
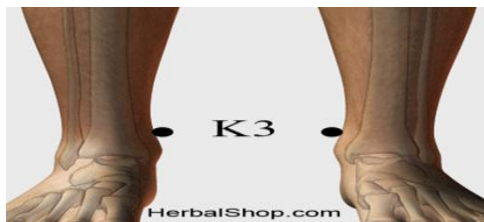
Intervention phase (Self acupressure)

Based on the acupressure method in the previous study done by **(Sherman et al.,2012)** the intervention consisted of three weekly sessions of 30 minutes each for a total of thirty sessions of acupressure. Acupressure was done through applying a steady, stationary pressure on the point for 1-2 minutes using thumbs, fingers, palms, the side of the hand, or knuckles.

Acupressure Point K3 — Tai Xi

Location: This point is located in the depression between the medial malleolus and tendo-calcaneus, level withe tip of the medial malleolus.

https://www.acusansthan-ald.in/one-point-acupressure-treatment

The researcher conducted the first session of the acupressure regimen, and following that, the researcher provided individual training about self-acupressure intervention for 15 minutes where the researcher first demonstrated

the exact location of k3 acupressure point & how to apply self-acupressure on the k3 point to each woman individually using educational photos and videos, and finally the woman practiced on the opposite leg while the researcher corrected any mistakes.

The researcher made phone calls three times a week to encourage and check

whether the participants complied with the program.

Post intervention phase (Evaluation)

Effect of self-acupressure on k3 point to relive the severity of urinary

leakage among pregnant women was evaluated through, a post-test (Ten weeks post the application of the acupressure) using the same tool (RUIS questionnaire) through phone calls.

Statistical analysis

Statistical Package for Social Science program (SPSS. version 22) was used in data entry and statistical analysis .Qualitative variables were represented as number and percentage. Quantitative variables were represented as mean +SD. Comparison between qualitative variables was done by using chi-square. Comparison between quantitative variables was done by using student t-test.

Results:

Table (1): Showed that there is significant difference between demographic clinical characteristics of the studied sample and urinary leakage

in relation to age, gestational DM, history of UTI, Pregnancy BMI with p-value (.021,.005, .002 , .023 respectively)

Table (2): Showed that there is significant difference between obstetrical history of the studied sample and urinary leakage in relation to gravidity, parity, gestational age &method of previous labor with p-value (.001 ,.001, .002 , .005 respectively)

Figure (1): Showed that prevalence of urinary incontinence among the studied sample was 68%.

Figure (2): Showed that only 37% of the studied sample suffer from pre pregnancy urinary leakage and 63% of the studied sample experience urinary leakage for the first time during the pregnancy.

Table (3): Showed that there is statistically significant difference between pre and post intervention regarding severity of urinary leakage with p-value 0.000.

Figure (3): Showed that there is statistically significant difference between pre and post intervention regarding the frequency of urinary leakage with p-value 0.000

Figure (4): Showed that there is statistically significant difference between pre and post intervention regarding volume of urine in each episode of urinary leakage with p-value 0.000.

Table (4): Showed that there is correlation between severity of urinary leakage in pre intervention & post intervention as well between occupation, gestational diabetes and history of urinary tract infection, gravidity, parity, gestational age ,method of previous labor and pre pregnancy urinary leakage.

Table 1

Distribution of the study sample according to their demographic and clinical characteristics in relation to urinary incontinence

	Total (100) N. (%)	Incontinent N= (%)	Continent N= (%)	p-value
Age:				
< 20yrs	8	6(75)	2(25.0)	
20-<30yrs	59	18(30.5)	41(69.5)	**.021***
30-<40yrs	33	8(24.2)	25(75.8)	
Educational level:				
higher education	22	6(27.3)	16(72.7)	.796
lower education	78	26(33.3)	52(66.7)	
Occupation:				
Employee	10	1(10.0)	9(90.0)	.108
Housewife	90	31(34.4)	59(65.5)	
Residence:				
Urban	70	22(31.4)	48(68.6)	.514
Rural	30	10(33.3)	20(66.7)	
Coffee consumption				
No consumption	82	27(32.9)	55(67.1)	.891
Less than once a week	10	3(30.0)	7(70.0)	
Equal to or more than once a week	8	2(25.0)	6(75.0)	
Tea consumption				
No consumption	34	10(29.4)	24(70.6)	.891
Less than once a week	8	3(37.5)	5(62.5)	
Equal to or more than once a week	58	19(32.8)	39(67.2)	
Family history of UI				
NO	94	29(30.9)	65(69.1)	.381
Yes	6	3(50.0)	3(50.0)	
Gestational diabetes				
NO	81	31(38.3)	50(61.7)	**.005***
Yes	19	1(5.3)	18(94.7)	
History of UTI				
NO	40	20(50.0)	20(50.0)	**.002***
Yes	60	12(20.0)	48(80.0)	
Constipation				
NO	44	18(40.9)	26(59.1)	.130
Yes	56	14(25.0)	42(75.0)	
Pregnancy BMI				
Underweight	4	4(100.0)	0(0.00)	**.021***

Healthy weight	24	6(25.0)	18(75.0)	
Overweight	36	11(30.6)	25(69.4)	
Obese range	36	11(30.6)	25(69.4)	
Previous perineal tear				
NO	66	20(30.3)	46(69.7)	.655
Yes	34	12(35.3)	22(64.7)	
Previous pelvic surgery				
NO	85	27(31.8)	58(68.2)	.561
Yes	15	5(33.3)	10(66.7)	

Table 2

Distribution of the study sample according to their obstetrical history in relation to urinary incontinence

|	Total (100) N. (%)	Incontinent N= (%)	Continent N= (%)	p-value
Gravidity				
Primigravida	28	14(50.0)	14(50.0)	
Less than 3	36	15(41.7)	21(58.3)	.001*
More than 3	36	3(8.3)	33(91.7)	
Parity				
Less than 3	64	29(45.3)	35(54.7)	. 001*
More than 3	36	3(8.3)	33(91.7)	
Gestational age				
First trimester	10	7(70.0)	3(30.0)	.002*
Second trimester	15	8(53.3)	7(46.7)	
Third trimester	75	17(22.7)	58(77.3)	
Abortion				
Less than 3	82	27(32.9)	55(67.1)	.785
More than 3	18	5(27.8)	13(72.2)	
Previous labour				
NO	27	15(55.6)	12(44.4)	.005*
CS	30	9(30.0)	21(70.0)	
vaginal birth	43	8(18.6)	35(81.4)	
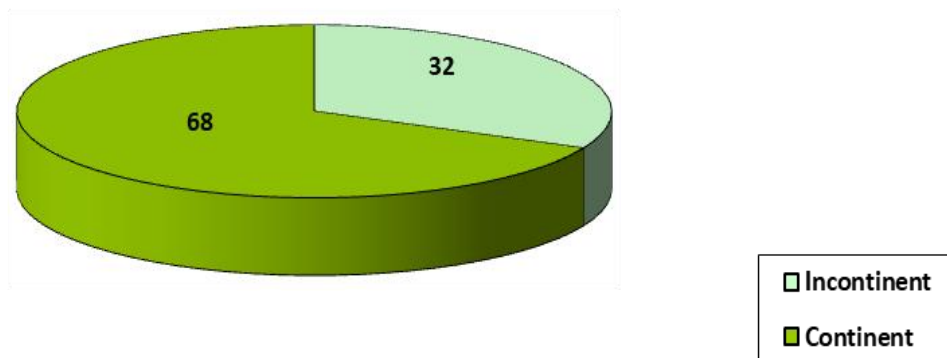
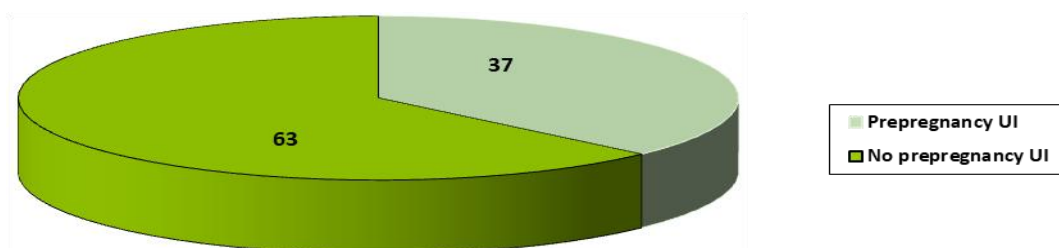***Figure 1*** *prevalence of urinary incontinence in the studied sample*

Figure 2 *Distribution of the studied sample according to onset of*

Table 3

Distribution of the study sample according to total score of RUIS scale pre and post intervention

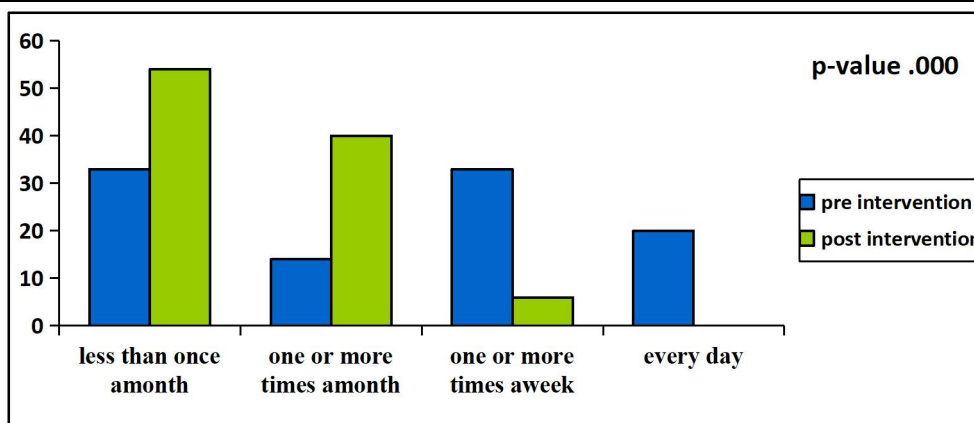| Item	Pre intervention		Post intervention		p-value
	N(68)	**%**	**N(68)**	**%**	
Mild urinary incontinence	1	1.5%	20	29.4%	
Moderate urinary incontinence	13	19.1%	45	66.2%	**0.000**[**]
Severe urinary incontinence	54	79.4%	3	4.4%	

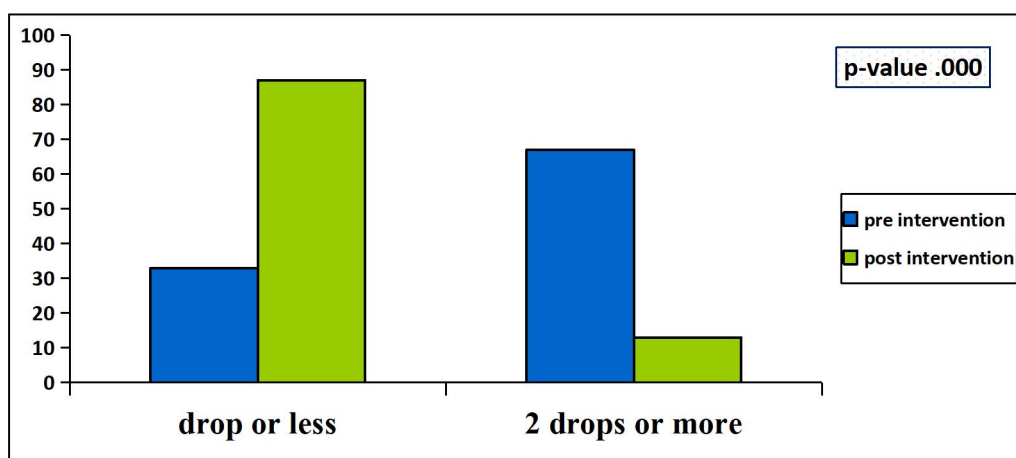***Figure 3*** *Frequency of urinary leakage pre and post intervention*

Figure 4 *Distribution of the study sample according to volume of urine leaked in each episode.*

Table 4

Correlation between the Severity of urinary leakage among the studied women and their demographic and clinical characteristics in pre and post intervention

Items		Urinary leakage Severity	
		Pre intervention	Post intervention
Age	Pearson Correlation	**.211***	.133
	Sig. (2-tailed)	.035	.187
Residence	Pearson Correlation	-.044	-.017
	Sig. (2-tailed)	.666	.870
Education	Pearson Correlation	-.061	-.074
	Sig. (2-tailed)	.545	.466
Occupation	Pearson Correlation	**-.200***	**-.220***
	Sig. (2-tailed)	.046	.028
Gravidity	Pearson Correlation	**.409****	**.360****
	Sig. (2-tailed)	.000	.000
Gestational age	Pearson Correlation	**.365****	**.325****
	Sig. (2-tailed)	.000	.001
Parity	Pearson Correlation	**.417****	**.364****
	Sig. (2-tailed)	.000	.000
Abortion	Pearson Correlation	.077	.101
	Sig. (2-tailed)	.447	.318
Coffee consumption	Pearson Correlation	.098	.147
	Sig. (2-tailed)	.331	.145
Tea consumption	Pearson Correlation	-.091	-.030
	Sig. (2-tailed)	.369	.768
Family history	Pearson Correlation	-.073	-.098
	Sig. (2-tailed)	.470	.334
Gestational diabetes	Pearson Correlation	**.266****	**.231***
	Sig. (2-tailed)	.007	.021
History of UTI	Pearson Correlation	**.297****	**.278****
	Sig. (2-tailed)	.003	.005
constipation	Pearson Correlation	.122	.030
	Sig. (2-tailed)	.227	.770
pregnancy BMI	Pearson Correlation	.114	.102
	Sig. (2-tailed)	.257	.311
Previous labour	Pearson Correlation	**.332****	**.342****
	Sig. (2-tailed)	.001	.000
Previous perineal tear	Pearson Correlation	.010	.086
	Sig. (2-tailed)	.922	.396
Previous pelvic surgery	Pearson Correlation	.014	.005
	Sig. (2-tailed)	.894	.964
	Pearson Correlation	**.600****	**.627****
	Sig. (2-tailed)	.000	.000

** Correlation is significant at the 0.01 level (2-tailed).

* Correlation is significant at the 0.05 level (2-tailed).

Discussion

Pregnant women are at a higher risk of UI mainly because of the mechanical and hormonal changes during pregnancy that affect the strength of the pelvic floor muscles. Accordingly, the urethra has no 'backboard' to support it because of the disruption of the endo-pelvic fascia; therefore, intra-abdominal pressure exceeds urethral pressure, and leads to involuntary loss of urine. Although UI is not a life- threatening problem, it could weaken and undermine confidence and social activities, as well it could lead to social

isolation. **(Mohadyoussef et al, 2018)** So this study aimed to evaluate the effect of self-acupressure on k3 point on urinary leakage during pregnancy.

With regards to urinary leakage prevalence and its onset in the studied sample, the current study discovered that almost two thirds of the sample had urinary leakage and experienced it for the first-time during pregnancy. This outcome is comparable with a study done by **(Mohadyousef et al ,2018)** in Malaysia to evaluate screening needs,

prevalence of UI, and its associated factors. They discovered that the majority of the pregnant women had experienced UI, with over than two thirds of them who experienced urinary leakage for the first-time during pregnancy.

But it was different with **(Soliman et al,2020)** who did their study in Egypt assuit city to quantify the prevalence of UI and to identify its potential risk factors as well assessed its impact on their quality of life and found that less than one third of the studied women suffered from urinary incontinence. This difference may be due to the different study subjects between the two studies, where the current study included only pregnant women that have more urinary leakage but in **(Soliman et al,2020)** study the subject included all females above 18 years old.

Concerning the severity of urinary leakage in the studied women before acupressure, the current study clarified that most of the studied sample had severe urinary incontinence in pre intervention, while after intervention, the majority of them had mild and moderate urinary incontinence with statistically significant difference between pre and post intervention with p-value 0.000. This is corresponded with **(Sherman et al,2012),** who applied their research in Hong Kong to gauge the effectiveness of a validated acupressure protocol for treating female urodynamic stress incontinence, and who reported that the results support acupressure as a treatment option for managing female with urodynamic stress incontinence with a significant improvement in all dimensions of the Chinese version of the King's Health Questionnaire in the intervention group.

Also **(Ayça and Derya, 2022),** who did their research in Turkey to demonstrate that acupressure could be used to relieve the symptoms of constipation during pregnancy and stated that self-administered acupressure could be effectively alleviate the symptoms of constipation among pregnant women. This result may back to the acupressure protocol which helped them to relieve severity of urinary incontinence.

With regards to correlation between the severity of urinary incontinence and demographic and clinical characteristics of the studied sample, the current study clarified that there was a correlation between severity of urinary incontinence and women' age, occupation, gravidity, parity ,gestational age ,method of previous labor , history of gestational diabetes, history of previous urinary tract infections and history of pre pregnancy urinary leakage. Where

the current study found that urinary incontinence before pregnancy was the strongest predictor for incontinence during pregnancy. As well women with a history of vaginal birth were more likely to suffer from incontinence during pregnancy, while a history of cesarean section showed

neither protective nor aggravating effect. Pregnant women with a history of urinary tract infection were more likely to report urinary leakage. Also pregnant women with a history of gestational diabetes were more likely to report urinary leakage. The same was noticed among pregnant women with more gravidity and parity as they were more likely to report urinary leakage. Also it was found that urinary leakage increased during the third trimester.

This result is corresponded with **(Wang et al, 2022),** who carried out their study in china to investigate the prevalence and risk factors of urinary incontinence during pregnancy and

stated that urinary incontinence before pregnancy, history of vaginal birth, coffee consumption, childhood enuresis and history of urinary tract infection were confirmed to be associated with increasing the risk of developing urinary incontinence during pregnancy.But incongruent with **(Soliman et al, 2020)** finding who reported a significant correlation between UI and age, educational level, family history of urinary incontinence, postmenopausal status, newborn weight > 4 kg, repeated abortion, history of pelvic surgery, chronic diseases, and coffee drinking. This difference may due to the different of study subjects

Limitations
1-Training women consume along time in demonstrating how to apply k3point self-acupressure to each woman individually and the exact location of the k3 point.

2-Urinary leakage was mainly diagnosed with a questionnaire alone, without an objective measure of confirmation, and this may lower the accuracy of urinary leakage diagnosis.

Conclusions
Self-Acupressure on k3 point was effective in relieving severity of urinary incontinence among pregnant women so acupressure could be a promising treatment option for urinary incontinence. The most significant factors associated with urinary leakage were gravidity, parity ,gestational age ,method of previous labor , history of gestational diabetes, history of previous urinary tract infections and history of pre pregnancy urinary leakage.

Recommendations
- Training Program for nurses about how to use K3 point self-Acupressure as safe, nonaggressive nursing intervention that consumes little

  time without resorting to pharmacological methods among pregnant women complaint of urinary leakage.
- Training program for pregnant women with urinary leakage on how to apply k3 self-acupressure at home to relieve severity of urinary leakage.
- More studies need to be done to confirm the impact of k3 self-acupressure on urine leakage during pregnancy.

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