Effect of Social Cognitive Theory Based Educational Program Regarding Lifestyle Modification among Patients with Gout

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Abstract

Background: Gout a disease of kings and king of diseases is the prevalent cause of chronic inflammatory arthritis. Patient education for gout has been found to improve drug adherence and promote healthy lifestyle. **Aim:** To appraise the effect of Social Cognitive Theory based educational program regarding lifestyle modification among patients with gout. **Research design:** A quasi-experimental research design was carried out. **Setting:** At Rheumatology Outpatient Clinic affiliated at Benha University Hospital in Benha City, this study was conducted. **Sample:** Purposive sample of 130 patients. **Tools:** Two tools were utilized; **I:** An interviewing questionnaire covered three parts about patients' socio demographic characteristics, patients' medical history, patients' knowledge and patients' reported practices regarding a healthy lifestyle. **II:** Social Cognitive Theory to assess patients' observational learning, healthy behaviors and self-efficacy. **Results:** 63.8% of the studied patients aged from 50 to more than 70 years old, 7.7% of the studied patients had good total knowledge pre educational program which increased to 80% post educational program, also 15.4% of the studied patients had satisfactory practices pre educational program which increased to 75.4% post educational program, and 36.2% of the studied patients applied observational learning, healthy behaviors and self-efficacy pre educational program which increased to 95.5% post educational program. **Conclusion:** Implementing Social Cognitive Theory based educational program enhanced the studied patient's knowledge, observational learning, healthy behavior, self-efficacy and the patient's lifestyle modified after implementation of the educational program. **Recommendations:** Distribution of an educational booklet to the Rheumatology Outpatient Clinics at Benha City Hospitals to be available to all gout patients.

***Keywords*:** Gout, Social Cognitive Theory, Educational Program, Patients.

Introduction

Gout is a type of metabolic rheumatic illness characterized by the accumulation of urate crystals in the tissues, tendons, and joints because of constantly elevating serum Uric Acid (UA). Gouty arthritis is characterized by acute, intermittent, inflammatory arthritis that progresses over time to chronic inflammatory polyarthritis. Globally, gout prevalence ranges from less than 1% to 6.8%. Recent epidemiologic research indicates that gout affects roughly 1.14% of China's general population and is becoming more common each year, and 1.4 to 2.5% in other countries **(Jennifer et al., 2022; Wang et al., 2023).**

Worldwide, in 2020, gout was 3·26 (3·11-3·39) times more common in men than in women, and it increased with age. Gout is predicted to affect 95·8 million people (81·1-116) by 2050; The surge was mostly due to population growth, with the expected change contributing only a tiny percentage. According to the facts, gout is a serious public health problem on a global scale **(Cross, 2024).**

Gout's clinical pictures comprise osteoarthritis and simultaneously inflammation, as well as system abnormalities connected to defective purine metabolism that frequently cause limited movement and considerably affect the Quality of Life (QoL) of the patients. The direct relationship between an elevation in serum UA levels and the accumulation of a significant number of crystals of monosodium urate surrounding the joints is obvious. Serum UA values of > 420 μmol/L for men and ≥ 360 μmol/L for females are still commonly employed as criterion for diagnosis. Gout therapeutic intervention comprises urate lowering medicine, such as xanthine oxidase inhibitors and allopurinol. etc... Furthermore, in conditions of gouty arthritis, if, functional malfunction of the joint or cosmetic deformation occurs, surgery is indicated **(Chen, Zhou, Tan, Zheng, and Oshmianska, 2021; Kuo Yao et al., 2024).**

Lifestyle modifications, such as dietary changes, can help reduce UA levels, the chemical that causes gout by creating crystals that deposit in joints. However, for most people, diet adjustments are insufficient to avoid gout. Medication is typically required to reduce UA levels sufficiently to prevent attacks. Still, making modifications in what eating can lead to fewer gout episodes **(Haddad, Almaaitah, Cameron, and Armstong-stassen, 2021)**.

Establishing a balanced diet is a key lifestyle aspect for gout management. Avoiding purine-rich meals like red and organ meats, some seafood, and alcohol may help reduce the blood level of UA and minimize the risk of gout attacks. Health-promoting behavior is a crucial predictor of health status and plays a significant role in preserving and enhancing health **(Landsberg, 2024).**

Theories have enormous potential to improve the efficacy of health education programs. Albert Bandura's Social Cognitive Theory (SCT) is among the best models for predicting and communicating good lifestyle behaviours. The idea highlights the interplay between behavioural, personal and environmental factors. The principle states that learning occurs because of the interaction of the three elements. Personal influences include attitudes and expectations; individual behaviours involve acts and decisions; and environmental variables consist of patterns and accessibility concerns **(Islam et al., 2023).**

Social Cognitive Theory has been effective in a variety of health education initiatives. SCT provides a means of understanding people's attitudes, actions, and educational needs; hence, SCT acts as a useful tool for developing successful intervention techniques. SCT comprises of essential characteristics that might assist subjects adopt a healthy lifestyle, including perceived: 1) Self-Efficacy (SE) or individuals' confidence in regulating actions; 2) Outcome Expectations (OE) or advantages and costs of maintaining own personal health behaviours; and 3) Social Support (SS) **(Bandura, 1998; Wayne, 2022).**

Within SCT components, SE is crucial in directly sustaining people's behaviors by trust with the capacity to employ abilities effectively when faced with challenges. A high SE allows a person to apply skills efficiently and give motivation to continue the behavior when faced with challenges. People with high SE are likely to utilize goal-setting abilities to drive coping with personal hurdles, such as shortage of time, to attain the aim of maintaining physical activity **(Mbambo et al., 2019).**

Another SCT dimension, OE, affects people's drive to engage in good action. Individuals can maintain healthy behaviours by considering the rewards of actions. Finally, SS is an environmental aspect in SCT that is used to recognize people’s behaviour. The

two most important parts of SS are 1) structural support, which refers to the quantity and forms of connections in an individual's social network, and 2) functional support, which includes emotional, informational, and instrumental assistance from family, friends, or others. Building supportive relationships strengthens social networks, assisting individuals in maintaining healthy behaviors **(Suriyawong & Pipatpiboon, 2022).**

Gout management options that work include treating acute flares and addressing the ongoing implications that lead to disability. Non-Steroidal Anti Inflamatory Drugs (NSAIDs), colchicine, and glucocorticoids are currently recommended for controlling acute flares. To avoid recurring gout flares, the basic goal is to lower the concentration of serum urate, and urate-lowering medicines must be used for the rest of one's life. Lifestyle changes (e.g., weight loss) and educational programs concentrating on nutritional enhancement could also be effective for the long-term strategy to avoid flare-ups or episodes among gout patients **(Cross, 2024; Johnson et al., 2024).**

Community Health Nurses (CHNs) play an important role in controlling the acuity and intensity of gout flares which can be a powerful incentive to take preventative action and offer a special opportunity to talk about long-term management strategies and changing behavior, which is difficult and calls for the knowledge and skills of patients as well as medical professionals. Educational intervention for gout can be enhanced by an interactive, patient-centred approach **(Tsiamalou et al., 2023).**

Community Health Nurses involved in controlling gout have extended to encompass multidisciplinary teams, and the number of nurses-led clinics has increased, with positive results. The educational program will identify and address educational requirements related to knowledge shortages, health literacy, race, gender, socioeconomic position, level of social support, and help to change patients' knowledge, attitude, and beliefs toward healthy habits **(Fields & Batterman, 2018; Brotis, et al., 2023).**

Significance of the study

Gout affects 1-4% of the Egyptian population, according to reports. The percentage is consistent with the global rates of gout, which has been observed around the range of 1-4% and the incidence range

around 0.1-0.3%. Gout affects men three to ten times more than women. Gout prevalence increased by 11-13% per decade of life, with incidence reaching 0.4% in those over the age of 80 **(El Miedany et al., 2022; Ardani & Yuniartika, 2024).**

Sufficient knowledge about gout management and attitudes towards practice by gout patients influence recovery and limit the potential harm. Insufficient information and ineffective controlling of gout treatment, significantly increase the likelihood of deficits and impairment. The behavior of patient is often impacted by information, attitudes, and desires **(Ardani & Yuniartika, 2024).**

Given the foregoing, the reason of this study is to evaluate both effectiveness and usefulness of education based on SCT in encouraging a healthy lifestyle among gout patients. By showing this, we may develop more effective ways for promoting a balanced diet, adequate exercise, and treatment adherence to avoid and control the burden of diseases caused by these issues.

Aim of study:

This study's aim was to appraise the effect of SCT based on educational program regarding lifestyle modification among patients with gout.

Research hypothesis:

Social Cognitive Theory based educational program will enhance gout patients' knowledge, observational learning, healthy behavior, self-efficacy, and the patient's lifestyle will be modified after implementation of the program.

Subjects and Methods

Study design

This study was conducted using a quasi-experimental research design.

Study setting

This study was accomplished at Rheumatology Outpatient Clinic at Benha University Hospital in Benha City, Egypt.

Sample: A purposive sample of 130 patients diagnosed with gout with the inclusion as patients who had gout for no less than 6 months, free from any disability and accept to involve in the study.

Tools: This study used two tools for data collection

Tool I: A structured interview was established by researchers, following the examination of pertinent local and international literature, and it was subsequently translated into clear Arabic, it had three components to examine the following:

Part I: a: Socio demographic characteristics of patients. It involved 8 items as: Age, sex, marital status, education level, occupation, residence, family monthly income and family type.

b: Patients medical history; composed of 4 closed ended questions such as: Duration of gout, the diseases patients suffer from, member of family suffers from gout and number of joints affected by gout.

Part II: a: Patients' knowledge regarding gout disease which involved 7 closed ended questions about: Meaning causes, predisposing factors, signs and symptoms, diagnosis, treatment, and complications.

b: Patients knowledge regarding healthy lifestyle composed of 3 closed ended questions as: Meaning, benefits, and items of healthy lifestyle.

Scoring system of knowledge

The knowledge scoring system for patients with gout was stated as follows: two scores for correct and complete answer, one score for correct and incomplete answer, while zero score for don't know. The total knowledge score ranged from (0-20), was classified as the following: Good ≥ 75 % (≥ 15) grades, average 60 - < 75 % (12-< 15) grades and poor < 60 % (< 12) grades.

Part III: Reported practices regarding healthy lifestyle among patients with gout, established by the researchers after examining the pertinent literature which comprised 25 items divided into 3 sections as follows:

- **Nutrition** which contained 14 statements (eating three meals a day in a fixed time, avoiding the liver and kidneys which having high quantities of purines and contribute to elevated blood uric acid levels, avoiding foods that contain high fats and cholesterol, reducing serving sizes of beef and lamb, taking more fruits, veggies and whole grains, which give complex carbohydrates

Also, eating seafood in moderation as part of the diet, avoiding sugar, soft drinks and alcohol, staying away from passive smoking, consuming lean meats and poultry production, low-fat dairy products, and grains as protein sources, drinking water regularly, using olive oil because it contains anti-inflammatory agents, drinking coffee on a regular basis, particularly regular coffee containing caffeine, which reduces the risk of gout, eating cherries because this has been linked to a lower risk of gout, and eating foods that contain vitamin C, such as

oranges, guava, and lemon, because they reduce uric acid).

-**Exercise** which included 6 statements (doing exercise, such as walking slowly and gradually, using appropriate sports shoes while exercising, doing relaxation exercises as meditation and sitting in a quiet place, such as yoga, doing slow breathing exercises, doing simple stretching exercises for the joints because they increase flexibility and relieve pain, paying attention to exercises that strengthen the joints to reduce pain in these joints, and movement exercises also help maintain and increase the flexibility of the joints and relieve stiffness).

-Compliance of medication and follow-up which involved 5 statements (taking drugs on a regular basis, consulting a doctor if there are adverse effects, periodical follow up, following the doctor's instructions and applying cold water compresses to the gouty joint to relieve pain and inflammation).

Scoring system of the reported practices: Each item of studied patients' reported practices was scored as: 1= Done 0= Not done, the total practices compromise 25 items = 25 grades. The total score was turned into a percent score which satisfactory if the score ≥ 60% (≥15 points), while unsatisfactory if it is < 60% (< 15 points).

Tool II: Social Cognitive Theory questionnaire adapted from (Sharafkhani et al., 2022), consisted of 23 elements divided into 3 sections

1- **Observational learning** which included 6 statements (observing the actions of others to learn healthy habits, taking those who practice healthy habits as role models, supporting healthy habits and intending to keep compliance, observing and learning coping techniques to eliminate stress that affects decisions, looking at previous actions for improvement, and following medical programs to gain benefit).

2- **Healthy behaviors** which included 10 statements (setting goals to motivate self to develop healthily, making a plan to follow a healthy regimen, preparing to do everything it takes to restore crucial and ordinary functioning, recognizing the connection between current act and future outcomes, evaluating health behavior through practice of daily activity, finding health improvement by maintaining healthy practices, developing alternatives to overcome the challenges face,

avoiding distractions from health, sharing health efforts with others, and altering the physical or social environment to promote health).

3- **Self-efficacy** which contained 7 statements (trying to achieve most of the established goals, facing difficult tasks and accomplish them, able to achieve results that are meaningful, believing that can succeed in almost any endeavor, setting one's mind on being able to effectively solve many problems, confident that can perform efficiently in a variety of tasks, and able to do most tasks very well even when things are difficult).

Scoring system of Social Cognitive Theory calculated as follows: Each item of the questionnaire was scored as: 2= Accepted, 1= Accepted to some extent, and 0= Not accepted. The range of the total scores was 0 to 46. The total score was converted into a percent score and classified as the following: Applied if ≥ 60 % (≥ 28 score) and not applied if < 60 % (< 28 score).

A guide booklet: It was designed by researchers, before preparing it, the researchers researched the relevant literature. The booklet was written in simple Arabic and illustrated with various images to aid patients' comprehension.

Content validity: A panel of three professionals from the Community Health Nursing Specialties examined the tools for clear, accordingly, relevant, being applicable, the necessary modifications were made based on their recommendations.

Pilot study: A pilot study on 13 patients was implemented, representing 10% of the sample size, used to examine clarity of tools, being applicable, and duration required to complete the questionnaire; filling the sheet took approximately 20- 40 minutes. Since no changes were made, the pilot research sample was involved in the overall sample.

Reliability: Cronbach's Alpha coefficient test was utilized to measure reliability, which revealed that each of the three sections had reasonably homogeneous items, as seen by the moderate to high dependability of each tool. Internal consistency of knowledge was 0.899, reported practices were 0.993, and Social Cognitive Theory was 0.997.

Ethical consideration: All ethical concerns were addressed; the study was approved by the Ethical Research Committee of the Faculty of Nursing at Benha

University **(Approval No. REC.CHN.P58) on December 4,2024, in session No.22.,** oral and written informed consent was gained from all patients prior to finishing the interview, and an initial overview to the study's goal was provided. Patients also informed that all information acquired were kept strictly confidential and used solely for the aim of the study. The forms did not require any names to maintain anonymity and secrecy. Also informed about their right to withdraw from the study at any moment without providing a reason. Confidential material submitted by research participants must be kept confidential, even if it is not legally protected or wealthy, and no legal force is used.

Administrative Approval

An official letter was received from the Dean of the Faculty of Nursing at Benha University, directed to the Director of Benha University Hospital in Benha City, as well as oral approval from the patients, to perform the study. The title, aim, tools, and study technique will be presented to secure the necessary participation for the researcher to interview patients at Benha University Hospital.

Social Cognitive Theory based on educational program was constructed through

1. Preparatory phase: To accomplish the research goal, the researchers first reviewed articles from both national and international sources that addressed distinctive features of the research problem. This supported the establishment of the study tools and assisted the researchers in understanding the problem concern. The Researchers created the program after performing analysis of the related literature. It was adjusted and modified based on the pre-assessment tools result.

2. Assessment phase: During this phase, the researchers interviewed and welcomed the patients, stated the objectives of the study, gave them all required information on the study's duration and activities, and got their informed consent. In this phase the researcher did the pre- test.

3. Planning phase: The researcher determined the important needs for participant group, priorities for needs, aim, and objectives were stated. In this stage the researcher planned to implement the program, with the declaration of general and specific objectives as follows:

General objective: Applying the educational program based on

Social Cognitive Theory (SCT) for improving knowledge, lifestyle practices and SCT components among studied patients with gout.

Specific objectives: Enhancing knowledge of patients regarding gout, modifying practices regarding healthy lifestyle and applying components of SCT through six sessions (3 theoretical and 3 practical).

Contents of educational program

Three theoretical sessions by the end of these sessions, each patient was able to have the knowledge about definition of gout, predisposing factors, causes, signs and symptoms, diagnosis, complications, treatment, appropriate diet, exercise manner, compliance of medication regimen for patients with gout, definition of healthy lifestyle, benefits, and its components and also known key components of Social Cognitive Theory (SCT), such as observational learning, healthy behaviors, and self-efficacy.

- Three practical sessions by the end of these sessions, each patient was able to improve their dietary habits, perform a series of simple exercises in a safe, supervised environment, utilizing both demonstration and redemonstration and adhere more consistently to their prescribed treatment regimens based on the application of Social Cognitive Theory (SCT) through practical demonstrations, opportunities for patients to observe successful behaviors, constructive feedback, and goal-setting activities, patients were empowered to translate theoretical knowledge into sustained positive lifestyle changes and more effective self-management of their condition.
- **Teaching Methods:** The following methods were utilized to teach program content; discussion, demonstration & re-demonstration, and presentation.

Teaching Aids: The designed educational materials were expressly made for the program implementation, including a handout created by the researchers, colourful posters, and films.

4. Implementation phase

Data was collected for 6 months, plus 2 weeks for pre-testing, from the start of November 2024 to final of April 2025. The researchers conducted the study on the selected sample at the Rheumatology Outpatient Clinic at Benha University Hospital in Benha City. The researchers went to the previously indicated study setting three days a week from 9:00 a.m. to 12:00 p.m. The sheet took about 30-40 minutes to complete for each patient, and the average number of

patients questioned was 2-4 per day depending on interviewer responses. Patients were given illustrated booklet guidance. To guarantee that all patients received the same teaching material, the researchers conducted a study across six sessions (3 theoretical and 3 practical) lasting four hours (2 hours theoretical and two hours practical), with each session lasting 40 minutes.

Each session began with a description of the previous session and an outline of the goals for the next one. Learning was enhanced through discussion, incentive, and reinforcement during program sessions. In addition to direct reinforcement in the form, each patient received a copy of the program as a gift to utilize for future reference. The researchers had full cooperation from all the patients. At the end of each session, patients took part in a discussion to clear up any confusion. They were also told what time the next session would be.

5-Evaluation phase: After conducting the program, evaluation was carried out by utilizing the post –test questionnaire which was the same formats of pre- test to determine the change in the studied patients' knowledge, and practices soon after the implementation of the program.

Statistical design

All collected data were set up, the data was scheduled and analyzed using the Statistical Package for Social Science (SPSS) version 20. The descriptive data, were coded, revised, tabulated and statistically analyzed included numbers, percentages, mean, standard deviations and tests of significance as (independent t-test, chi-square test) was assessed. Degrees of significance of the results was considered non-Significant (NS) if $p > 0.05$, significant (S) if $p \leq 0.05$ and highly Significant (HS) if $p \leq 0.001$.

Results

Table (1): Displayed that; 63.8% of the studied patients aged from 50 years to more than 70 years with mean was 52.26±15.5, 65.4% of them were male, bedside, 69.2% of them were married, 58.5 % of them were secondary education, although 40% of them employed, 61.5% of them their family monthly income was not sufficient, furthermore 64.6% of them were a nuclear family.

Table (2): Presents that 63.8% of the studied patients had gout disease from more than 1 year, bedside, 53.1% of them had hypertension, also 43.8% of them

had diabetes mellitus, 73.8 % of them had members of family suffering from gout and furthermore 58.5% of them had two or more joints affected by gout.

Table (3): Revealed that there were highly statistically significant differences between the studied patients' knowledge about gout and health life style pre and post program (P< .001).

Figure (1); Demonstrates that 7.7% of the studied patients had good total knowledge pre-program which increased to 80% post program, while 53,8% of them had poor total knowledge pre-program which decreased to 3.8% post program.

Table (4): Demonstrates that there were highly statistically significant differences between all sections of reported practices pre and post program (P< .001).

Figure (2): Portrays that 15.4% of the studied patients had satisfactory practice preprogram which increased to 75.4% post program, while 84.6% of them had unsatisfactory practices pre-program which decreased to 24.6% post program.

Table (5): Portrays that there were highly statistically significant differences between all sections of Social Cognitive Theory pre and post program (P< .001).

Figure (3): Displays that 36.2% of the studied patients applied the Social Cognitive Theory pre-program which increased to 95.5% post program, while 63.8% of them did not apply the Social Cognitive Theory pre-program which decreased to 4.5% post program.

Table (6): Illustrates that there were highly statistically significant differences between total knowledge and total practices among the studied patients with gout pre and post program (P< .001).

Table (7): Demonstrates that there were highly statistically significant differences between total Social Cognitive Theory and total reported practices among the studied patients with gout pre and post program(P< .001).

Table (8): Displays that there was a positive, highly statistically significant difference between total knowledge, total reported practice, and total Social Cognitive Theory among the studied patients with gout pre and post program (P< .001).

Table (1) Distribution of the studied gout patients regarding their socio demographic characteristics (n=130).

Socio Demographic characteristics	No	%
Age		
18 –> 30	3	2.3
30 – > 50	44	33.9
50 –≥70	83	**63.8**
Mean ± SD = 52.26±15.5		
Sex		
Male	85	**65.4**
Female	45	34.6
Marital Status		
Single	2	1.5
Married	90	**69.2**
Widow	31	23.8
Divorced	7	5.5
Education		
Basic education	32	24.6
Secondary education	76	**58.5**
University education	22	16.9
Occupation		
Employee	52	**40.0**
Free work	23	17.7
Housewife	25	19.2
On pension	30	23.1
Family monthly income		
Sufficient	50	38.5
Not sufficient	120	**61.5**
Type of family		
Nuclear family	84	**64.6**
Extended family	46	35.4

Table (2) Distribution of the studied gout patients regarding their medical history (n=130).

Patients' medical history	No	%
Onset of gout		
6 months	3	2.3
6 months – > 1 year	44	33.9
≥1 year	83	**63.8**
The chronic diseases that patients suffer from*		
Rheumatic disease	22	16.9
Diabetes mellitus	57	43.8
Hypertensive disease	69	**53.1**
Are members of family suffering from gout?		
Yes	96	**73.8**
No	34	26.2
Number of joints affected by gout		
Less than two joints	54	41.5
Two or more joints	76	**58.5**

Results are not mutually exclusive*

Table (3): Frequency distribution of the studied gout patients regarding their total knowledge about gout and healthy lifestyle pre and post program (n=130).

Knowledge Sections	Pre program						Post program						X2	P-value
	Complete correct answer		Incomplete correct answer		Don't know		Complete correct answer		Incomplete correct answer		Don't know			
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%		
Knowledge about gout	13	10	50	38.5	67	51.5	109	83.8	18	13.8	3	2.3	149.1	.000**
Knowledge about healthy lifestyle	6	4.6	51	39.2	73	56.2	98	75.4	25	19.2	7	5.4	144.7	.000**
Total	**10**	**7.7**	**50**	**38.5**	**70**	**53.8**	**104**	**80**	**22**	**16.9**	**4**	**3.1**	**164.3**	**.000****

****Highly statistically significantly difference (P< .001).**

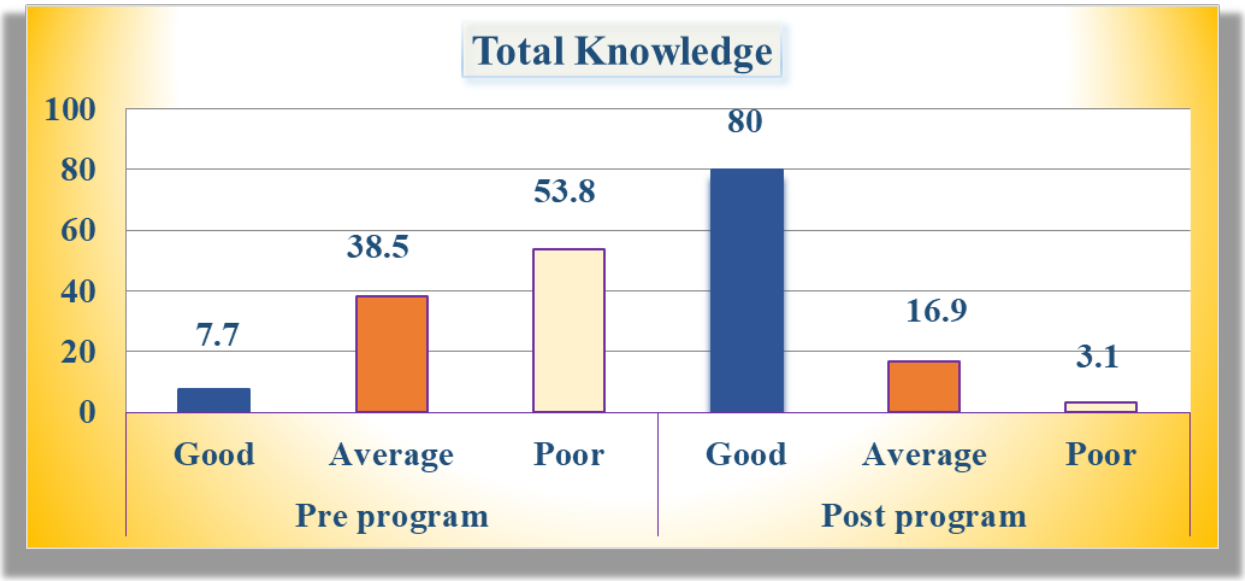

Figure (1): Percentage distribution of the studied gout patients regarding their total knowledge about gout and healthy lifestyle pre and post program application (n=130).

Table (4): Distribution of the studied gout patients regarding their total reported practices about healthy lifestyle pre and post program application (n=130).

Reported practice sections	Pre program				Post program				X2	P-value
	Done		Don't done		Done		Don't done			
	No.	%	No.	%	No.	%	No.	%		
Nutrition	17	13.1	113	86.9	111	85.3	19	14.6	135.8	<.000**
Exercise	11	8.5	119	91.5	113	86.9	17	13.1	160.4	<.000**
Compliance of medication and follow-up	31	23.8	99	76.2	95	73.1	35	29.9	63.1	<.000**
Total	20	15.4	110	84.6	98	75.4	32	24.6	94.4	<.000**

**Highly statistically significantly difference (P< .001).

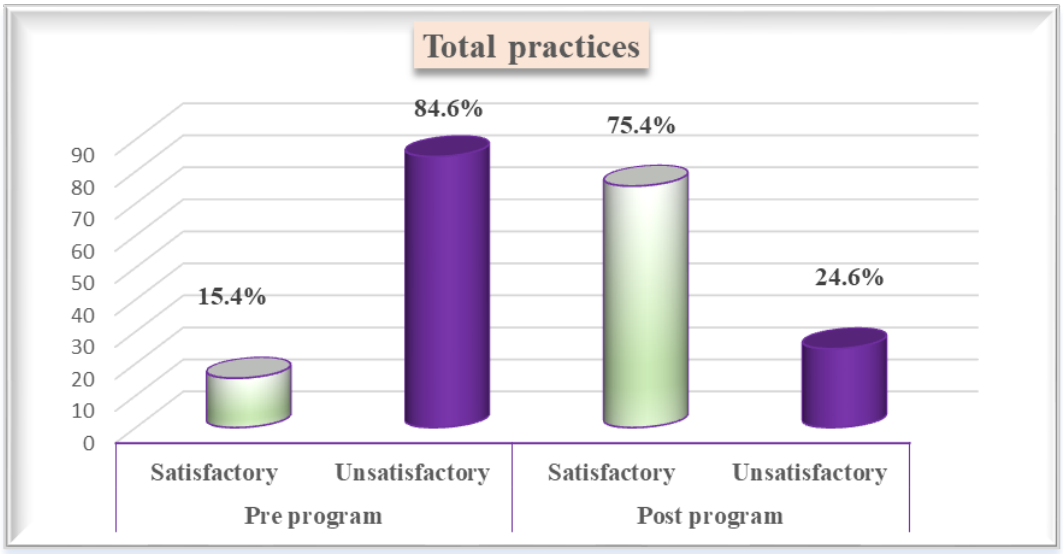

Figure (2): Percentage distribution of the studied gout patients regarding their total reported practices about gout pre and post program (n=130).

Table (5): Distribution of the studied gout patients regarding their application of social cognitive theory pre and post program (n=130).

Social Cognitive Theory Sections	Pre program						Post program						X2	P-value
	Accepted		Accepted to some extent		Not accepted		Accepted		Accepted to some extent		Not accepted			
	No	%	No	%	No	%	No	%	No	%	No	%		
Observational learning	7	5.4	79	60.8	44	33.8	119	91.5	10	7.7	1	.8	149.1	<.000**
Healthy behaviors	5	3.8	116	89	9	6.9	124	95.4	4	3.1	2	1.5	218.8	<.000**
Self-efficacy	8	6.2	119	91.5	3	2.3	113	86.9	15	11.5	2	1.5	172.03	<.000**
Total	7	5.4	104	80	19	14.6	119	91.5	8	6.2	3	2.3	193.5	<.000**

****Highly statistically significantly difference (P< .001).**

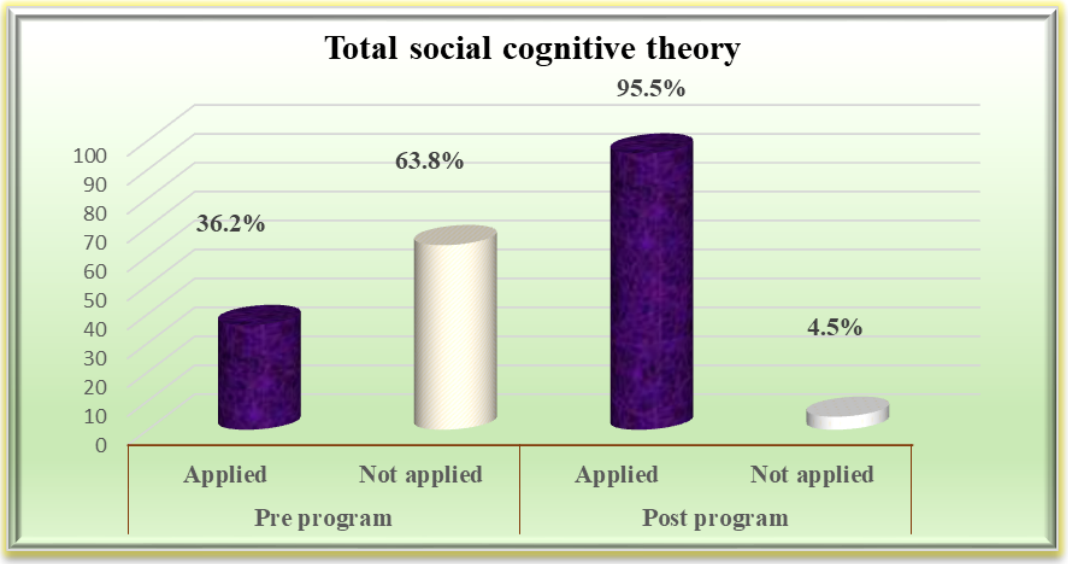

Figure (3): Percentage distribution of the studied gout patients regarding their application of social cognitive theory pre and post program (n=130).

Table (6): Statistically relation between total knowledge and total reported practices among the studied gout patients pre and post program (n=130).

Total reported practices	Total knowledges score																X2	P-value
	Pre program								Post program									
	Good (n= 5)		Average (n= 50)		Poor (n=75)		Total		Good (n= 104)		Average (n= 22)		Poor (n=4)		Total			
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%		
Satisfactory	1	20	4	8	2	2.7	7	5.4	89	85.6	14	63.6	1	25	104	80	189.51	<.000**
Un satisfactory	4	80	46	92	73	97.3	123	94,6	15	14.4	8	36.4	3	75	26	20		

**Highly statistically significantly difference (P< .001).

Table (7): Statistically relation between total social cognitive theory and total reported practices among the studied gout patients pre and post program (n=130).

Total reported practices	Total Social Cognitive Theory								X2	P-value
	Pre program				Post program					
	Applied (n= 47)		Not applied (n=83)		Applied (n= 124)		Not applied (n=6)			
	No.	%	No.	%	No.	%	N/ o.	%		
Satisfactory	9	19.1	3	3.6	96	77.4	1	16.7	140.77	.000**
Un satisfactory	38	80.9	80	96.4	28	22.6	5	83.3		

**Highly statistically significantly difference (P< .001).

Table (8): Correlation matrix between total knowledge, total reported practices, and total Social Cognitive Theory among the studied gout patients pre and post program (n=130).

Items			Total Knowledges	Total Reported Practices	Total Social Cognitive Theory
Pre program	Total knowledges	r	1	.086	.078
		P-value		.061	**000****
		N		130	130
	Total Practices	r	.086	1	.392
		P-value	.061		.065
		N	130		130
	Total Social Cognitive Theory	r	.078	.392	1
		P-value	**000****	.065	
		N	130	130	
Post program	Total Knowledges	r	1	.003	.085
		P-value		**.000****	**.000****
		N		130	130
	Total Reported Practices	R	.003	1	.008
		P-value	**000****		**.000****
		N	130		130
	Total Social Cognitive Theory	R	.085	.008	1
		P-value	**.000****	**.000****	
		N	130	130	

**Highly statistically significantly difference (P< .001).

Discussion

Gout patients are ignorance about the slow and steady deposition of urate crystals and their harmful impact on joint health. Inadequate information and inadequate care of gouty arthritis considerably raise the potential of disability and impairment. When dealing with individual behaviour change, SCT considers various levels of social ecology theory. SCT has been widely employed in health promotion because of the emphasis on the individual and the environment, which has become a prominent focus in recent years for promotive initiatives for health **(Wayne& LaMorte, 2022; Islam et al., 2023).**

Concerning socio-demographic characteristics of the studied patients, the present study displayed that; more than three fifths of the studied patients were between 50 years to more than 70 years with mean SD 52.26±15.5, almost two thirds of them were male, bedside, slightly less than three fifths of them were secondary education, also two fifth of them were employed, and three fifths of them their family monthly income were no enough (Table 1). These findings were consistent with **Watson et al., (2023)** who conducted a study in UK on 1184 gout patients about associated factors with change in health related Qol, and revealed that, the pparticipants' mean age was 65.6 years (S.D. 12.5) at baseline, 1126 (95.1%) were White European and 990 (83.6%) of them were male.

On the contrary, the previous findings disagreed with **Ardani& Yuniartika (2024),** who conducted a study in Iran on 40 gout patients about educational pain management programme and reported that the mean & standard deviation of participants' age is (56.5 ± 6,220) with around the range of 47 to 69 years, the highest number 80% was female, 57.5% of them unemployed and the highest number 37.5% was at the junior high class level.

As addresses patients' medical history, the present study presented that more than three fifths of the studied patients had gout from more than 1 year, bedside, more than half of them had hypertension and approximately two fifths of them had diabetes mellites (Table 2). These results were consisted with **Chen et al., (2021)** who performed a study about behavioral characteristics of patients with gout and their impact on the results of urate lowering therapy in China on 74 patients and clarified that 63.8% of the studied patients had the gout from more than 1 year, bedside, more than half of them had

hypertension and minority of them had diabetes mellitus.

Also, the previous results agreed with **Khormi et al., (2023),** who studied perception of gout patients and their perspectives regarding diagnosis and management: A cross-sectional study in Saudi Arabia, n=230, reported that the majority of the patients (84.0%) were diagnosed for more than 1 year. The most common multiple diagnosis among the patients was dyslipidemia accounting for 22.1%, while 10% & 15% of patients had DM and hypertension respectively. This could be because gout patients with comorbidities are more likely to be given a higher dose of pharmacological treatment. Based on the idea that hyperuricemia alone is insufficient to explain the role of gout in the development of metabolic syndrome, liver disorders, hypertension, and diabetes.

Also, the study results showed that more than two thirds of those studied patients had members of the family suffering from gout, and slightly less than three fifths of them had two or more joints affected by gout (Table 2). This result agreed by **Wang et al., (2023)**, who undertaken a cross-sectional study based on an information-motivation-behavioral skills theory in Southwest China on 230 patients about relationship between Qol and psychosocial behavior among male gout patients and clarified that the mean gout impact scale score was 52.7±15.3. Factors linked with the total gout impact scale were symptom duration (P=0.010), frequency of attacks over half a year (P=0.003), and number of affected joints (P=0.013).

Regarding the knowledge of the studied patients about gout disease and healthy lifestyle, the present study displayed that there were highly statistically significant differences between each of total knowledge of patients about gout and healthy lifestyle pre and post program (P<.001) (Table 3).

The previous results were supported by **Ramsubeik et al., (2018)** who conducted a systematic review and meta-analysis study in England about effectiveness of educational and behavioural health care interventions to improve gout outcomes, discovered statistically significant increase in overall mean knowledge scores about gout disease pre/post program (P<.001). This might be due to the effectiveness of the educational materials based on the SCT in raising the studied patients' level of knowledge through group discussions, presentations, and booklet content that increased their awareness about the disease

Regarding the total knowledge level of the studied patients, the current study demonstrated that minority of the studied patients had good total knowledge preprogram which increased to the majority of them post program (Figure1). This finding was agreed with **Ardani& Yuniartika (2024),** who indicated that prior to obtaining health education, 100% (40 participants) were in the lack of knowledge category, which increased to 100% of participants had good knowledge.

According to the researchers, the prior results could be attributable to a knowledge gap caused due to lack of availability of health information, which can also be affected by one's educational degree. Before getting health education, while after receiving the health education, and dissemination of instructional booklets cause the justification for knowledge enhancement and the patients level of knowledge increased which mean that health education has a good influence on the study sample because they learn new information about diseases, and most of patients now understand, ask questions actively, and explain the health concerns they experienced.

Also, the current study portrayed that there were highly statistically significant differences regarding reported practices of nutrition, exercise, compliance of medication& follow up pre and post program (P<.001) (Table 4). These results contradicted with **Wang et al., (2023)**, the study found that disease treatment management had a negative correlation with unmet gout treatment needs (β= -0.178), whereas diet management had a negative correlation with gout concern during attacks (β= -0.138). This could be because that active disease treatment and diet management can help to improve the healthy lifestyle in gout patients. The current study revealed a relationship between behavioural management and the healthy lifestyle among gout patients, implying that the healthy lifestyle can be improved through effective management interventions.

Concerning total reported practices of the studied patients, the present study demonstrates that less than fifth of the studied patients had satisfactory reported practice preprogram which increased to three quarters of them post program, (Figure 2). These findings disagreed with **Suriyawong & Pipatpiboon (2022),** who accomplished a systematic review study in Thailand about SCT based Interventions on Healthy Lifestyles for Patients and reported that the studied patients had satisfactory practices preprogram

which increased to 75.4% post program.

According to the researchers, previous data cleared that health education about gouty arthritis is an activity that can motivate changes in participant behaviour, including knowledge and attitudes. Participants gain knowledge through education, which leads to previously undiscovered personal changes and has a good impact on the process of behavior change toward healthy behaviour.

Concerning Social Cognitive Theory, the present study displayed that there was highly statistically significant difference between each of total observational learning, healthy behaviors, and self-efficacy pre and after model application (P<.001) (Table 5). The previous results was parallel with **Shao et al., (2018),** who achieved a study on gout patients regarding effect of educational program based on Health Belief Theory on patients' belief, physical activity, and serum uric acid: a randomized controlled trial and found that self-efficacy and activity level in the studied group were significantly higher after the program implementation and theory application compared with the same at baseline.

The previous results were disagreed with **Schlenk et al., (2020)** who perform a randomized controlled trial in Pennsylvania on 150 patients for promoting physical activity in older adults with knee osteoarthritis and stated that there was no significant gain in self-efficacy (P =.365) or outcome expectancy (P =.12) between the two groups after intervention and follow-up.

Concerning total Social Cognitive Theory, the current study illustrated that, more than one third of the studied patients applied of Social Cognitive Theory preprogram which increased to most of them post program (Figure 3). This result was agreed with **Suriyawong & Pipatpiboon (2022),** who reported that the average score for the components of the Social Cognitive Theory after the educational implementation increased than before. According to the researchers' point of view it was concluded that the structured educational program based on SCT was a successful strategy for improving the observational learning, healthy behaviors, and self-efficacy among patients with gout.

Concerning relation between the studied patients' total knowledge and total reported practices, the present study cleared that there were highly statistically significant differences between total knowledges score, and total

practices score among the studied patients with gout pre and post program (P<.001) (Table 6). This could be due to the use of practical and theoretical sessions based on the Social Cognitive Theory resulted in raising awareness and improving practices in gout patients and the educational program helped the patients to identify health services, alternative behaviours and medication compliance which influence changes in participant behaviour.

Concerning relation between the studied patients' total reported practices and total SCT, the present study showed that there were highly statistically significant differences between total SCT scores and total practice scores among the studied patients with gout pre and post program (P<.001) (Table 7). This result agreed with **Suriyawong & Pipatpiboon (2022),** who revealed statistically significant differences in total SCT scores and total practice scores among the studied patients. This could be attributed to the general educational content based on theory that patients received which highlighted the benefits of action, improved observational learning, and provided support that increases self-efficacy and the likelihood of effective behavior changes and lifestyle modification.

Concerning correlation between the studied patients' total knowledge, total reported practices, and total SCT, the present study demonstrated that there was a positive highly statistically significantly difference between total knowledge, total reported practices and total Social Cognitive Theory among the studied patients with gout pre and post program (P<.001) (Table 8).This findings agreed with **Chen et al., (2021)** who reported a positive association between the tested patients' self-care routines and SCM theory. This might be because the utilization of practical and theoretical sessions based on SCT resulted in increased awareness, which led to considerable improvements in lifestyle adjustment practices among gout patients.

Conclusion

In the light of the current study results: Social Cognitive Theory based on educational program enhanced gout patients' knowledge, observational learning, healthy behavior, self-efficacy, and the patient's lifestyle modified after implementation of the educational program. So, the research aim, and hypothesis were accomplished.

Recommendations

- Provide ongoing awareness programs for all gout patients to

enhance their understanding and motivate practices toward healthy lifestyle.

- Distribution of an educational booklet to the Rheumatology Outpatient clinics at Benha City Hospitals to be available to all gout patients for promoting healthy lifestyle changes.
- Further research is needed on large samples regarding prevention and early detection of gout disease and implementing educational guidelines for the management of gout.

Acknowledgments

The researchers expressed their deepest thanks to all gout patients who shared in accomplishment of the current study.

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