



Effect of Nursing Care by Using Swedish Massage , Kinesio Tape for Knee Osteoarthritis Patients on Pain, Functional Status and Quality of life

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ABSTRACT

Background: Knee osteoarthritis is one of the most frequent causes of physical disability among adult world wide. **Aim of the present study** was to evaluate effect of nursing care by using kinesio tape , swedish massage on knee osteoarthritis patients , pain , functional status and quality of life **Subjects and method;** A quasi-experimental study was conducted at the Physical Medicine, Rehabilitation and rheumatology Department of Tanta University Hospital. A convenience sampling of 100 adults patients was divided into four groups. Each consist of 25patients, group1 control groups and study groups 2, 3,4are the study groups. **Tools:** Three tools were used for data collection as follow; Tool (I) Structured interview Questionnaire included two parts Part (one) Bio sociodemographic data, Part (two): Physical Health Status Assessment , Tool (II)Pain assessment tool, Tool (III) Tool :Short Form 36 (SF-36) Health Survey Questionnaire. **Results;** the main results revealed that there was statistical significant improvement in functional status study group4 (swedish massage, kinesio taping) than other three groups(1,2,3) throughout the intervention period of the study and There was a high statistical significant improvement in quality of life for study group4 (swedish massage, kinesio taping) than other three groups(1,2,3) throughout the intervention period of the study. **Conclusion and recommendations:** Swedish massage and kinesiology taping had positive effect on reduction of pain and improving , functional status and quality of life .encouraging for combination of kinesio tape ,Swedish massage with other treatments as core treatment for kneeosteoarthritis patients

Key wards; Knee osteoarthritis , Swedish massage , kinesio tape, functional status , quality of life.

Introduction:

Osteoarthritis (OA) is one of the most common recurrent disabling joint disorders and represents a significant source of discomfort and disability in the Western world .OA is a chronic, progressive, and degenerative disorder that involves the entire joint and presents bone and cartilage impairment that is characterized by variable inflammation and subchondral bone structural changes and damage of the protective articular cartilage. Knee osteoarthritis is a multifactorial degenerative joint disease that is caused by changes In the articular cartilage and the subchondrial bone, osteophyte formation, and synovial

tissue inflammation (Zain et al, 2020,Saran et al , 2020).

Knee osteoarthritis is one of the most common articular cartilage diseases and it is one of the major causes of physical and socioeconomic disabilities .The disease comprises half of the problems in people aged over 50years and represents the second leading complaint among outpatients and affecting millions of people worldwide(Chin et al, 2019,Stone et al ,2020). . Patients with KOA experience appreciable amount of limitations that impact their ability to live independently and deteriorate their quality of life . Globally, 80% of people with KOA has some degree of activity limitation,25% cannot perform instrumental

activities of daily living and 11% of the total affected population reporting the need of personal care (Dunn et al, 2019). According to WHO world health organization estimated that the Prevalence of OA in the World was 151.4 million, The American 22.3 million, Africa 10.1 million, Eastern Mediterranean 6.0 million, Europe 40.2 million, South- East Asia 27.4 million, Western Pacific 45.0 million.

Knee osteoarthritis is the most prevalent form of arthritis and in urban settings. It was 55.1% in South Africa and in rural settings. The prevalence of disease in Egypt appears to be as high as 26% of women and 12% of men. However, a review of Tanta Main University Hospital has revealed statistical records that more than 1000 patients had knee osteoarthritis diagnosed in physical , rehabilitation and rheumatology department in 2019(Fitzgerald et al ,2020).

Management of knee osteoarthritis is conservative and Operative measures. Conservative measures encompass different approach of Non pharmacological and Pharmacological measures. Non pharmacological measures include use of some interventions to decrease pain and stiffness, Improve quality of life such as Swedish massage and kinesiology taping. Pharmacological measures include drug therapy and Operative measures include surgical management .

In relation to Swedish massage is a complementary intervention .It is characterized by long strokes applied according to the venous and lymphatic flow. It is a painless, gentle and non forceful technique that is not associated with any serious adverse effect It can provide several benefits to the body such as increased blood flow, reduced muscle tension and neurological excitability and an increased sense of well-being (Clave et al ,2019) .In relation to kinesio taping Method is designed to facilitate the body's natural healing process while allowing support

and stability to muscles and joints without restricting the body's range of motion. It is used to successfully relieve a variety of orthopedic, neuromuscular, neurological and medical conditions. Kinesio tape is an elastic thin, cotton, porous fabric with acrylic adhesive (Atman et al ,2019).

Patients with knee osteoarthritis tend to increase their physical limitations, pain and Functional limitation with disease progression. These Patients suffer from progressive increased impact on their activities of daily living which leads to losses in General health, leisure, social life, wellbeing and sleeping quality, leading also to decrease in their quality of life (Aman T et al ,2020). Normally, quality of life is According to the World Health Organization, "Health related to quality of life" How the disease or the treatment is affecting the different aspects of life . QoL not only influenced by a disease and its treatment but also by socioeconomic status and living condition.(Chin et al ,2018)

Role of nurses assist patients by becoming familiar with underlying principles, proper practices and research findings about alternative medicine and related therapeutics. The nurse provides physical and psycho-social support, also encourages patients to become independent. The primary nursing management of knee osteoarthritis is to provide physical care which encompass assessment of pain in addition to associated factors , its effect on activity of daily living (ADL) and optimizing functional ability as well as intervention to relieve pain (Phipps et al,2019).

Significance of the study:

It is anticipated that KOA is a disease with a high incidence and prevalence, with high economic burdens. The number of affected individuals expected to increase. Nursing care using kinesio taping and Swedish massage lead to reduction of pain and improve

functional ability , improve quality of life, prevent disability which is largely attributable to the effects of disability, co-morbid disease and the expense of treatment. Since current management for knee osteoarthritis give only few benefits, so different alternative therapeutic interventions are urgently needed (Heoman et al,2019)

Aim of the study:

The aim of this study was to evaluate effect of nursing care by using kinesio tape , swedish massage on knee osteoarthritis patients , pain , functional status and quality of life .

Research hypothesis:

Study groups who receive Swedish massage will be exhibited reduction of pain and improving functional status and quality of life. Study groups who receive kinesio tape will be exhibited reduction of pain and improving functional status and quality of life ,Study groups who receive Swedish massage and kinesio tape will be exhibited more reduction of pain and improving functional status.

Subject and method.

Research Design:

A quasi-experimental research design was used in the present study.

The study was used to conduct this study the Physical Medicine, Rehabilitation and rheumatology department at Tanta University Hospital.

Subjects:

The sample of this study consisted of a convenience sample of 100 adults patients divided into four groups. Each consisted of 25patients, group1 control groups and three study groups (2,3and 4) are study groups.

- The sample size was calculated based on the following criteria: confidence level of error 5% type 1 error .05 and power of test 95% of confidence on Epi info.soft ware program.

- **Control group1** consisted of 25adult patients was received routine nursing care by hospital nursing staff.

-**The Study groups:** consists of 75 adult patients was received protocol of care

-**Study group 2** : consists of 25 patients received Swedish massage only

-**Study group 3:** consists of 25 patients received kinesio tape only

-**Study group 4:** consists of 25 patients received Swedish massage and kinesio tape

Inclusion criteria:

- Conscious Able to communicate verbally.
- Adult patients (21- 60years).
- Both sexes
- Ambulatory without an assistive device.
- Patients not exhibiting any deformity stiffness in the knee for at least 6 months prior to screening;
- Patient with Grade II and grade III of kneeosteoarthritis according to kellgren lawrence scale
- Never used KT(kinesio tape)
- Never used Swedish massage.
- Individuals without neurological, vestibular, systemic, visual or auditory deficits diagnosis that make evaluations impossible.

Exclusion criteria:

- Open wound

- Scars which have not yet healed
- Has allergy to Acrylic
 - Infective condition of the skin of the knee and fragile skin around the knee.
 - Patients with congenital diseases that includes talpies equino varum or valgum

Tools of data collection: Three tools were used to conduct this study

Tool (1) “Structured Interview Questionnaire”

This tool was developed by the researcher after reviewing of related literature It comprises two parts as follows(Ramsey et al ,2020).

Part (one):Bio sociodemographic data: such as patient's code,

name, age, sex, marital status, educational level, and occupation.

Part (two): Physical Health Status Assessment :

Physical Health Status Assessment was used to assess patients knee joint condition upon their first admission to the department, during and after intervention, **this part includes Western Ontario and McMaster Universities Arthritis Score (WOMAC) covered 3 dimensions (Angst et al , 2018)**

It was developed by Bellamy in 1982 and updated by American college in 2013 researchers and adopted by researcher to evaluate functional status. is comprised of 24 items divided into three subscales: **Pain** (5 items) ,score range (0-20), **stiffness** (2 items), score range (0-8) , and **functional limitation** (17 items) ,score range(0-68). Patients are asked a range of questions about their ability to carry out daily activities such as using the stairs, rising from sitting, lying in bed

and conducting light or heavy domestic duties.WOMAC take 12 minutes

Scoring systems .The 24 items were scored based on likert scale A Likert scale is used and all items have five possible answer options scored from zero (No Problems) to four (Extreme Problems) and each of the five scores is calculated as the sum of the items included. It consists of 3 subscales ,Pain subscale : range from No pain equal to (Zero) ,Slight Pain equal to (1-5),Moderate equal to(>5-10),Severe equal to(>10-15), Worst Pain equal to (>15-20),**Stiffness subscale** range from Zero equal to No stiffness, slight stiffness (>1-4), Moderate equal to (>4-6), Severe equal to(>6-8), **Physical function** range from Zero equal to No functional limitation , slight functional limitation equal to (1-17), Moderate functional limitation equal to (>17-34), severe functional limitation equal to (>34-51),Extreme functional limitation equal to (>51-68). Scores are transformed to a 0–96 scale, ranging from ‘none’ to ‘extreme’.

- **None** equal to (zero).

- **Mild** equal to (1)

- **Moderate** equal to (2)

-**Severe** equal to (3).

-**Extreme** equal to (4)

Scores for each section will be summed. **So that lower subscale scores represent, less pain ,less stiffness, or better physical function**

Total Scoring system:

-Normal functional status allocated score equal to zero to less than 25

- Mild functional limitation allocated score equal to 25 to less than 50

-Moderate functional limitation allocated score equal to 50 to less than 75

- Severe functional limitation allocated score equal to 75- 96

Tool (II)Pain assessment tool:

The Indiana Polyclinic Combined Pain Scale (IPCPS) was first developed in (2001)and updated by **Dimitry Arbuck in (2016)** ⁽²¹⁾. It consists of Eleven Statements that indicates patient responses to pain severity . It translated into Arabic and It adopted by researcher to evaluate the intensity of pain.

Scoring system: No pain equal to score (zero) , Unpleasant sensation equal to score (1) , Minimal pain equal to score (2) ,Mild pain equal to score(3) ,Mild to moderate pain equal to score (4),Moderate pain equal to score (5), Moderate to severe pain equal to (6),Severe pain equal to (7),Debilitating pain equal to (8), Agonizing pain equal to(9), Worst imaginable pain equal to (10)

Total scoring:

-No pain equal to 0

-Mild pain equal to 1-3

-Moderate pain equal to 4-6

-Severe pain equal to 7- 9

-Worst pain equal to 10

Tool (III): Short Form 36 (SF-36) Health Survey Questionnaire:

It was developed by (John E. Ware) and updated in 2015. It was translated into Arabic and adopted by researchers to assess quality of life (QOL) for patients with knee osteoarthritis. It consists of 36 items in the SF-36 are grouped into eight scales including physical

functioning (10 items), role limitations due to physical problems (role physical, 4 items), role limitations due to emotional problems (role emotional, 3 items), bodily pain (2 items), social functioning (2 items), mental health(emotional wellbeing) (6 items), vitality(energy and fatigue) (4 items) and general health perceptions (general health, 5 items).

Scoring system:

The response choices are scored on a 3 - 6 point category scale. For each question, the raw scores will be coded, summed and transformed to (0 to100 scales)(0 equal to poorest possible ,more disability)health state, (100equal to best) possible health state, good quality of life)

- Poor quality of life allocated score equal to less than 60
- Fair quality of life allocated score equal to 60 to less than 75
- Good quality of life allocated score equal to 75 to 100

Ethical considerations:

- a- Nature of the study did not carry any harm or pain to all subjects
- b- The necessary official permission from the faculty of nursing was sent to authorities at the two selected units to conduct the study.
- c- An informed consent was taken from every participant patient after complete explanation about the aim of the study.
- d- Complete confidentiality and privacy was considered regarding data collection and results. A code number was used rather than names.
- e- The patient was told about his right to withdraw from the study at any time and without any reason.

Methods of data collection:

Administrative process:

-An official permission to carry out the study was obtained from the responsible authorities of faculty of Nursing ,Tanta university and the head of the Tanta physical medicine and rehabilitation department.

2-Ethical and legal considerations:

- a- Nature of the study did not carry any harm or pain to all subjects
 - b- An informed consent was written from every participant patient after complete explanation about the aim of the study.
 - c- Complete confidentiality and privacy was considered regarding data collection and results. A code number was used rather than names.
 - d- The patient was told about his right to withdraw from the study at any time and without any reason.
 - E- The researcher was certified to perform Swedish massage and kinesio tape to conduct this study.
- 3- The tools of the study Were developed after review of related literature.
- 4- This study was conducted in 6 month duration.

. 5-Content validity

- The developed tools were tested for content validity for clarity and applicability by five jury experts in the field of Medical-Surgical, Nursing, Physical therapy

- 6- Apilot study was carried out on 10 % of total patients to test the feasibility and applicability of the developed tools, accordingly, needed modification was done. It was excluded from the original sample of the study
- 7- Tools(I and II and III) was used by researchers before beginning of intervention and tool I part I used only before intervention while (Tool I part II, Tool II ,Tool III was used two times before, after

three weeks of intervention for both control and study groups.

8- Reliability of the tool

-The reliability for the study tools was calculated by Cronbach's alpha test; It was 0.816for Tool (I) part (A), 0.802 for part(b), .869for part (c) , 0.927 for tool (II) and 0.836 for Tool (III) part (A) 0.828 for tool (III) Part(b)and 0.876 for part (C), 0.842 for part (d), 0.887 for part (E), 0.905 for part (f), 0.912 for part(G) 0.867 for part(H)

The study was conducted at four phases

8- The present study was conducted through four phases (Assessment, planning, implementation and evaluation).

1. Assessment phase:-

For Patients:-

Immediately upon admission both study and control groups were assessed using tool I & tool II&tool III before implementing the designed nursing intervention, post one week and post three weeks intervention..

2-Planning phase:

Based on data of assessment phase and literature review, nursing care was developed, goal and expected outcomes were taken into consideration when planning patients care.

A-Stating the goal of the designed nursing intervention:

-To improve general health of knee osteoarthritis patients

B- The planning phase had many components that included; preparing of the environment and massage session , preparing equipments such as buying kinesiology tape , and johnson oil , shaving hair as needed.

3. Implementation phase :

A-The Study group was encouraged to receive nursing intervention

B- The study group (2) was encouraged to receive Swedish massage and the researcher started session with explaining about swedish massage followed by practice of massage for 20- 30minutes (3session once weekly for 3 consecutive days

C- The study group (3) was encouraged to receive kinesio tape and the researcher started session with explaining about kinesio tape application followed by kinesio tape application once per week for 3session for consecutive weeks. Kinesio tape once applied left in place for 5-7 days.

The study group (4) encouraged to receive Swedish massage and kinesio tape and the researcher started session with explaining about swedish massage and kinesio tape followed by Swedish massage for 20-30 minutes before kinesio tape application for3 consecutive weeks)

e-Total(3) sessions were given to each subject of study groups(2,3,4) with the frequency of 1 session per week for 3 consecutive weeks.

f) After completion of 3 weeks of intervention, for 3 weeks. Medications (NSAID) duly prescribed by the physician was continued along with the physiotherapeutic approach in both groups in the study applications.

4- Evaluation phase:

Evaluation was done for both groups (control and study) was assessed two times ,First time before application nursing care by using tools I , II ,III and Second time after 3weeks from nursing care by using tools I part II,tool II,tool III.

Methods of data analysis

All data were collected, coded, tabulated and subjected to statistical analysis. Statistical analysis was performed by statistical package SPSS version 26. also , Data was expressed as numbers and percentage. Significance for numeric variable was determined using t-test. A probability level of p-value level P<0.01 was the level of significance for testing the research hypothesis.

Results

Table (1): Distribution of the studied patients of all groups according to their bio socio demographic characteristics.

BioSocio-demographic Characteristics	Group 1 Control group n(25)		Group 2 Study group n(25) Swedish massage		Group 3 Study group n(25) Kinesio Taping		Group 4 Study group n(25) Swedishmassage plus Kinesio taping		Total		χ ² P	
	N	%	N	%	N	%	N	%	N	%		
Age	21 – 30	2	8	3	12	2	8	2	8	9	9	6.346 0.705
	31 – 40	7	28	4	16	6	24	3	12	20	20	
	41 – 50	9	36	7	28	12	48	11	44	39	39	
	51 – 60	7	28	11	44	5	20	9	36	32	32	
Sex	Male	10	40	13	52	8	32	7	28	38	38	3.565 312
	Female	15	60	12	48	17	68	18	72	62	62	
BMI	Healthy weight	2	8	3	12	2	8	1	4	8	8	2.565 0.861
	Overweight	7	28	4	16	7	28	5	20	23	23	
	Obese	16	64	18	72	16	64	19	76	69	69	
Marital status	Single	8	32	5	20	2	8	3	12	18	18	4.562 0.971
	Married	14	56	13	52	17	68	16	64	60	60	
	Divorced	1	4	2	8	4	16	2	8	9	9	
	Widow	2	8	5	20	2	8	4	16	13	13	
Occupation	Employee	4	16	1	4	3	12	2	8	10	10	4.562 0.971
	Worker	13	52	16	64	16	64	15	60	60	60	
	Free work	2	8	3	12	1	4	2	8	9	9	
	House wife	4	16	3	12	3	12	5	20	15	15	
	No Work	2	8	2	8	2	8	1	4	7	7	
Education	Illiterate	3	12	9	36	4	16	2	8	18	18	10.845 0.286
	Read and write	15	60	8	32	12	48	11	44	46	46	
	Secondary school	6	24	7	28	7	28	9	36	29	29	
	University	1	4	1	4	2	8	3	12	7	7	
Assistant devices	Cane	12	48	2	8	9	36	8	32	31	31	17.229 0.139
	Walker	2	8	3	12	6	24	7	28	18	18	
	Knee braces	4	16	8	32	4	16	5	20	21	21	
	Crutches	3	12	6	24	4	16	2	8	15	15	
	None	4	16	6	24	2	8	3	12	15	15	
		8	32	12	48	6	24	9	36	35	36	
Site of kneecostoarthritis	Right	8	32	12	48	6	24	5	20	26	26	4.220 0.647
	Left	8	32	5	20	8	32	5	20	26	26	
	Both	9	36	8	32	11	44	11	44	39	39	

Table 2: Effect of Swedish massage , kinesio tape on severity of pain of studied and control groups according to The Indiana Polyclinic Combined Pain Scale.

PAIN		Group 1 Control G1	Group 2 Swedish massage G2	Group 3 Kinesio tape G3	Group 4 Swedish massage plus Kinesio tape G 4	χ ² P	
Pre (Base line)	No pain	N	0	0	0	3.226 0.358	
		%	.0%	.0%	.0%		
	Mild	N	0	0	0		
		%	.0%	.0%	.0%		
	Moderate	N	12	10	6		10
		%	48.0%	40.0%	24.0%		40.0%

	Severe	N	13	15	19	15	
		%	52.0%	60.0%	76.0%	60.0%	
Post. one week	No pain	N	0	0	0	1	13.21 0 0.153
		%	.0%	.0%	.0%	4.0%	
	Mild	N	2	4	2	8	
		%	8.0%	16.0%	8.0%	32.0%	
	Moderate	N	8	9	10	10	
		%	32.0%	36.0%	40.0%	40.0%	
	Severe	N	15	12	13	6	
		%	60.0%	48.0%	52.0%	24.0%	
Post. three weeks	No pain	N	1	2	1	8	19.02 9 0.025 *
		%	4.0%	8.0%	4.0%	32.0%	
	Mild	N	9	14	11	5	
		%	36.0%	56.0%	44.0%	20.0%	
	Moderate	N	11	7	11	11	
		%	44.0%	28.0%	44.0%	44.0%	
	Severe	N	4	2	2	1	
		%	16.0%	8.0%	8.0%	4.0%	

* Significant at level P<0.05.

Total quality of life			Group 1	Group 2	Group 3	Group 4	χ^2 P
Pre (base line)	Poor	N	16	20	18	21	3.152 0.370
		%	64.0%	80.0%	72.0%	84.0%	
	Fair	N	9	5	7	4	
		%	36.0%	20.0%	28.0%	16.0%	
	Good	N	0	0	0	0	
		%	0%	0%	0%	0%	
Post one week	Poor	N	8	10	9	7	10.308 0.112
		%	32.0%	40.0%	36.0%	28.0%	
	Fair	N	16	13	10	10	
		%	64.0%	42.0%	40.0%	40.0%	
	Good	N	1	2	6	8	
		%	4.0%	8.0%	24.0%	32.0%	
Post three week	Poor	N	4	7	5	2	25.986 0.001***
		%	16.0%	28.0%	20.0%	8.0%	
	Fair	N	17	13	11	4	
		%	68.0%	42.0%	44.0%	16.0%	
	Good	N	4	5	9	19	
		%	16.0%	20.0%	36.0%	76.0%	

Table (1)-Distribution of the all groups according to their bio socio demographic characteristics.

Regarding age It was found that more than one third of all studied patients (39.0%) of was between (51 – 60) years old while minority of all studied groups (9%) was (21- 30) years old. **Regarding Body mass index (BMI).** It was found about more than two third of all studied groups (69%) was obese while minority of all groups, (8%) had healthy weight . **Regarding sex** It was found less than two third of all groups (60%) were females suffering from knee osteoarthritis. **Regarding Occupation.** It was found that more than half (60%) all groups were workers,

Table (2) Illustrated Severity of pain of studied and control groups according to The Indiana Polyclinic Combined Pain Scale.

It was found that **pre intervention**(slightly more than half (52%) of control group1 had severe pain compared with **Swedish massage group 2** about less than two third(60%) had severe pain while slightly more than three quarter (76%) of **kinesio tape Group 3** had severe pain compared with less than two third (60%) of **Swedish massage and kinesio tape group** had severe pain respectively .

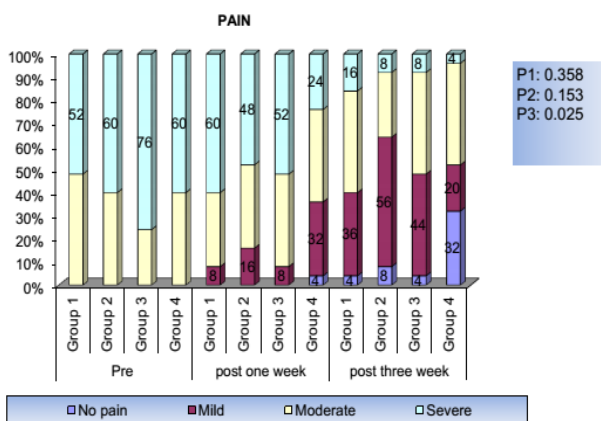


Figure (1): Percent distribution of the all groups according to severity of pain throughout of the study

Table (3): Distribution of all groups according to functional status by using Western Ontario and McMaster Universities Arthritis score

WOMAC		Group 1 Control G1	Group 2 Swedish massage G2	Group 3 Study group n(25) Kinesio Taping	Group 4 Swedish massage plus Kinesio tapeG 4	χ^2 P	
Pre (base line)	Mild	N	0	0	1	5.45 5 0.48 7	
		%	.0%	.0%	4.0%		
	Mode rate	N	18	16	18		14
		%	72.0%	64.0%	72.0%		56.0%
Sever e	N	7	9	6	11		
	%	28.0%	36.0%	24.0%	44.0%		
post one. week	Mild	N	2	3	4	12.9 47 0.04 4*	
		%	8.0%	12.0%	16.0%		40.0%
	Mode rate	N	18	13	14		12
		%	72.0%	52.0%	56.0%		48.0%
Sever e	N	5	9	7	3		
	%	20.0%	36.0%	28.0%	12.0%		
post.t hree week	Mild	N	3	4	8	17.7 07 0.00 7*	
		%	12.0%	16.0%	32.0%		56.0%
	Mode rate	N	19	14	12		9
		%	76.0%	56.0%	48.0%		36.0%
Sever e	N	3	7	5	2		
	%	12.0%	28.0%	20.0%	8.0%		

Table (4) Effect Swedish massage , kinesio tape on total quality of life of studied and control groups according to 36 questionnaire.

It was noticed that **post one week of intervention** about approximately to one third (32%) of control group 1 had moderate pain while **minority** (8%) had mild pain compared with **group2** about slightly more than one third (36%) while minority (16%) had mild pain **compared with group 3** about more than one third(40.0%) while minority (8%) had mild pain and in **group 4 had more reduction of pain about more than one third of group 4 (40%) had moderate pain and one third (32%)% had mild pain.**

It was found **post 3 weeks of interventions . There was statistical significance difference of reduction of pain** where($p = 0.025^*$) about approximately to one third(32%) of **group 4** had (No pain) compared with group (3,2 and 1) .

Table (3) showed Functional status of studied groups by using Western Ontario and McMaster Universities Arthritis score.

It was found **Post 3 weeks of interventions . There was a statistical significance difference among all four groups as regards functional status where $P=0.007^*$ in which** about more than half (56%)of G4 had mild functional limitation compared with **kinesio tape group** about one third (32%) of **group 3** had mild functional limitation and minority (16 %, 12%) **had** mild functional limitation

Table (4)-Total Quality of life of studied and control groups according to 36 questionnaire .

It was found **post 3 weeks of interventions. There was highly statistical significant improvement in total quality of life** where **$P=0.001^{**}$** .about slightly more than quarter (76%) had good quality of life compared with **group 3 had about more than one third (%36) had good QOL** and

minority (20%,16%) of g2,1 respectively had **good quality of life** .

Discussion:

Osteoarthritis is the most common form of arthritis. It is a prevalent form of degenerative joint disease that mostly affects weight-bearing joints. OA can affect every joint in the body, but it is most typically seen in the knee (**Distel et al, 2017**). Knee osteoarthritis is one of the most causes of the most frequent causes of physical disability among adult world wide. It develops slowly and the pain worsens over time , It leads to significant physical ,psychological, financial and emotional effects on patients and have disruptive impact on individual's quality of life .Although there is no cure for osteoarthritis, there are treatment and management options. Osteoarthritis treatment focuses on relieving pain, limiting or preventing disability, and increasing quality of life.

So, this study was done to determine effect of nursing care by using swedish massage , kinesio tape for knee osteoarthritis patients on pain, functional status and quality of life . The findings of this study revealed that Nursing care that including (Swedish massage , kinesio tape) was effective in reducing knee pain , Improving functional status, quality of life of patients(**Valdes et al, 2018**)

Regarding bio socio demographic data , the finding of current study revealed that more than one-third of studied patients were between forty one to fifty years old. This finding was the same line with (**Valdes et al** and **Blagojevic, et al**)who reported that about one –third of studied patient were between forty to fifty years old. This finding was in contrast with a study conducted by **Aaltonen & Karjalainen (2017)** who mentioned that Half of studied patients were in age

twenty to thirty between years old had kneeosteoarthritis .

Concerning Body mass index, the current study revealed that approximately to more than two third of all studied groups were obese .This study was in agreement with **Geyer & Schönfeld (2018)** who mentioned that more than half of studied patients were obese had higer risk for kneeosteoarthritis .This finding was in contrast with a study conducted by(**Felson et al , 2016**) who mentioned minority of studied groups were obese had kneeosteoarthritis. This may be due to obese is defined as being 20% over ones healthy weight, some factors as social condition (especially in the rural areas) and may have some unhealthy habits of diet. Obese are more prone to bearing weight on the joint, and obese persons have more bone density than thin people due to increased mineral deposition and estrogen level. They also have a lower muscle strength in their legs, which may increase the risk of knee osteoarthritis.

Concerning sex, the current study revealed less than two third of all groups were females suffering from knee osteoarthritis. This could be related to the action of estrogen throughout the menopause period, and hence there are theoretical reasons to believe that female hormones may have a role in the development of osteoarthritis. This result was congruent with finding of study was done by (**Kolasinski et al ,2020**) who mentioned that more than half of all group were females had high prevelance of KOA. This finding was in contrast with a study conducted by(**Piluso S et al ,2019**) who mentioned less than quarter was females of all groups had kneeosteoarthritis.

Regarding Occupation. The current study revealed that more than half all groups were workers .this due to engaging in occupations involve road laborers, involve knee bending , lifting also bearing on

joints. This result was supported by(**Wang et al , 2021**) who pointed out that more than half of all groups were workers in heavy manual occupations were associated with increased risk with KOA than in light manual occupations . This results was inconsistent with finding of study was done by (**Booton R et al, 2016** who mentioned that more than one third of all groups were workers were associated with less risks with KOA.

Regarding effect of swedish massage , kinesio tape on severity of pain of studied and control groups, The current study revealed that pre intervention , patient pain was severe in slightly more than half of control group , approximately to two third and more in the three groups respectively .this finding in agreement with(**Kocyigit et al ,2018**) and contradicted with study was done by **Wageck & Nunes,2021**)In relation to post one week of intervention . the severity of knee osteoarthritis pain was in approximately two third of control group , less than half of swedish massage group ,slightly more than fifty in kinesio tape group while less than quarter for combination between swedish and kinesiotape group. this finding was line with (**Jongbloed & Nynke, 2016**) Also this result in contrast with (**Sarallahi et al, 2019**).

In relation to post three weeks ,there was statistical significant reduction of pain about approximately to one third of group four had quadry effect than control group No pain in group four (received swedish massage and kinesio tape) compared with other groups.This result was supported by (**Omari ,2019**) who mentioned that more than half of group four had more reduction of pain after receiving swedish massage and kinesio tape **on the other hand** ,This results was inconsistent with finding of study was done by (**Cooper et al, 2019**) who mentioned minority of (Swedish and kinesio tape

groups) had reduction of pain in knee. this might be due to receiving two technique provide double effect benefits involve with massage access the body through the skin and send specific signals of relaxation also there are many neuroendocrine chemicals that are influenced by skin massage such as endorphine production increase dopamine, serotonin, epinephrine and norepinephrine secretion that lead to relaxing joint and close pain gate , impeding pain message to and from the brain (Hinman , 2016

Regarding effect of swedish massage , kinesio tape on functional status of studied patients and control groups, The current study revealed that pre intervention ,Approximately to one third of control group, more than one third of group two , less than one quarter of group and approximately to one half of group four had severe functional limitation this finding in agreement with (Lee J&Choi S,2016) and in contrast with study was done by (Kelly ,2018) . In relation to post one week of intervention , functional status of kneeosteoarthritis patients was more than one third of group four had mild functional limitation while minority of other groups had mild functional limitation this finding in agreement with (Van et al , 2018) and contradicted with study was done by (Podsiadlo & Richardson ,2017)

Moreover ,post three weeks of intervention ,There was statistical improvement in functional status for group four had More than one half had mild functional limitation. This result was supported by (Geenan et al, 2018) who mentioned that more than one third of swedish massage and kinesio tape technique had mild functional limitation, **On contorary** with finding of study was done by (Torres et al, 2019) mentioned that one quarter of therapeutic exercises and kinesio tape group had moderate functional limitation. **This may be attribute** to received double effect of both swedish

massage, kinesio tape technique that include massage lead to decrease tissue adhesion(restrict movement , increses pain), increase muscle compliance and increase range of motion , decrease stiffness, also KT be applied to facilitate muscle contraction of injured muscles and not restrict range of motion . Also an increase in the interstitial space between the skin and underlying connective tissues will provide a greater flow of venous and lymphatic fluids. All this lead to improve functional status.⁽¹⁵⁷⁾

Regarding quality of life , It was found that **pre intervention** more than two third of all groups had poor quality of life. **This study revealed post one week ,There was No statistical significant improvement of quality of life** quarter of group four had good quality of life compared with other groups **This result was in the same line with finding of study was done by Cho M et al,(2019) ⁽³⁶⁾ who mentioned that** about nearly to one third had **good quality of life** according to quality of life

Also, **Post three weeks ,** The current study revealed that **There was significant improvement in quality of life** about slightly more than quarter of group four had good quality of life compared with **other groups this might be due to following insrtuctions of applications of kinesio tape , take long time for improving.This result was consistent with Bowling A& Brazier J (2019) ⁽³⁷⁾ who mentioned** about slightly more than half had good quality of life of g4 compared with other groups .This result was inconsistent with study was done **Jacobsen (2018) ⁽³⁸⁾ who mentioned** one third (of swedish and kinesio group (4) had fair **good quality of life** compared with other groups.

Conclusion

Based on the findings of the present study, It can be concluded that:

Knee Osteoarthritis (KOA) is a common chronic condition resulting in pain, , functional limitations, increased healthcare utilization and high economic costs to society . Nursing care involved Swedish massage and kinesiology taping had positive effect on reduction of pain and improving , functional status , quality of life

Recommendation

Knee Osteoarthritis (KOA) is a common chronic condition resulting in pain, , functional limitations, increased healthcare utilization and high economic costs to society . Nursing care involved Swedish massage and kinesiology taping had positive effect on reduction of pain and improving , functional status , quality of life

-The implementation of nursing care had an effect on reduction of pain of knee osteoarthritis patients.

-There was statistical significant improvement in functional status of the study group 4 (Swedish and kinesio tape) compared other groups throughout the intervention period of the study.

-There was a high statistical significant improvement in quality of life for study group4 (swedish massage, kinesio taping) than other three groups(1,2,3) throughout the intervention period of the study

- **Recommendations.**

- **For patients**

- Kneeosteoarthritis Patient to use Combination of kinesio tape ,Swedish massage Because of Quadry effect Kinesio to relieve Pain as well as Improving quality of life .
- The Kneeosteoarthritis patients caused mainly by physically suffering problems to apply kinesio tape

- The kneeosteoarthritis patients caused mainly by emotionally suffering problems to use Swedish massage
- Swedish massage is necessary than Kinesiotape in patient who had emotional Problems.
- Kinesiotape should be used as core treatment for kneeosteoarthritis.
- Plan of nursing care to be based on the dimension of quality of life that bodily pain affected by KOA in priority of care .
- Nursing care should be established based on the comprehensive assessment especially for main causes and manifestation for KOA to choose the most effective method of physiotherapy to improve patient quality of life.

Recommendation for future research

- Application of kinesio tape with osteoarthritis of other areas of body (Back ,hand , hip, wrist, neck)
- Training courses for Teaching Nurses application of kinesiotape and Swedish massage for more benefits of patients
- Increase in duration of massage for two month for observe effect on quality of life because it need long period .
- Orientation program and continuous in-service educational program should be held for newly appointed staff nurses working in this field and patients.
- Application of study on larger samples

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