

The Effect of Self Learning Package on Female Students Regarding Future Pregnancy with Rheumatoid Arthritis

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Abstract

Background Rheumatoid arthritis (RA) is an unimaginably painful disease that can lead to severe disability. Fertility in female students with RA is impaired. So, a self-learning is important. **Aim of the study** To assess the effect of self-learning package on female students regarding future pregnancy with rheumatoid arthritis. **Research design** Quasi - Experimental design was used in this study. **Sample** Purposive sample of 60 female students in outpatient of rheumatology clinic -Helwan University Hospitals. **Tools** Three tools were used for data collection **Tool 1** Interview questionnaire **Tool 2** Assessment practice (RAQOL) questionnaire **Tool 3** Satisfaction assessment. **Result** Showed that, there was highly statistically significant difference between pre and post intervention regarding rheumatoid arthritis in female students and Future Pregnancy. **Conclusion** Current study concluded that, highly improvement of knowledge aspect post intervention, satisfied of the content of the booklet regarding to future pregnancy with rheumatoid arthritis. These results support the study hypothesis. **Recommendation** Empower and motivate female students to adopt health lifestyle to control rheumatoid arthritis especially during future pregnancy.

Keywords Self Learning Package, Future Pregnancy, Rheumatoid Arthritis.

INTRODUCTION

Rheumatoid arthritis (RA) is an excruciatingly painful illness that mostly affects the joints but can also affect other organs. RA is an inflammatory and autoimmune disease. This implies that the immune system mistakenly assaults healthy cells in the body, resulting in inflammation (painful swelling) in the afflicted areas ⁽¹⁾.

Although RA is incurable, it may be effectively treated and controlled with medication and self-management techniques. RA is often treated with drugs that decrease disease progression and prevent joint deformities. Female students with arthritis can benefit from self-management measures such as physical exercise, which reduces pain, improves function, and delays impairment ⁽²⁾.

Pregnancy planning is critical and should include a rheumatologist, obstetrician, and gynecologist. Before trying conception, RA should ideally be under control for 3 to 6 months. Women with uncontrolled rheumatoid arthritis may be more likely to have preterm births that are low birth weight. This may increase the probability that the infant may require further medical attention early in life ⁽³⁾.

Due to disease-related functional limitations and the possible side-effects of RA drugs, RA female students (of reproductive age) confront a variety of hurdles as they navigate the path to parenting. Living with rheumatoid arthritis is challenging, and pregnancy and children may make it even more difficult. As a result, early therapy has superior long-term results. However, with careful preparation, self-care, and close collaboration with your health care team. Pregnancy and parenthood may be made easier and more joyful ⁽⁴⁾.

A female student's reproductive health is visibly affected by the existence of an underlying rheumatic condition, with worries regarding pregnancy, contraception, and drug safety. Miscarriage and fetal abnormalities are a danger for female students. Furthermore, the increased intravascular volume seen during pregnancy has a negative impact on heart or renal function, arthralgias, gestational diabetes, hypertension, severe prematurity, growth restriction, psychological issues disruption, and infertility ⁽⁵⁾.

Awareness and education regarding RA can benefit for female students . The nurse should educate female students on the need of early detection and provide expert guidance in maintaining a high quality of life. The World Health Organization (WHO) defines QOL as a person's assessment of their place in life in relation to the culture and value

systems in which they live. Physical health, psychological condition, amount of independence, social interactions, personal views, and their relationship to prominent elements of their surroundings are all included in this broad term. Especially for female students suffering from inflammatory arthritis. Participating in successful physical exercise programmers, enrolling in a self-management education class, stop smoking, and maintaining a healthy weight ⁽¹⁾.

Significance of The Study

During pregnancy, rheumatoid arthritis (RA) frequently alters. Approximately 50% of pregnant RA patients have minimal disease activity, and 20% to 40% achieve remission by the third trimester. The World Health Organization (WHO) estimates that more than 230 million individuals worldwide suffer with RA. Experts expect that the number of RA sufferers will more than quadruple by 2030. ⁽⁶⁾.

Aim of The Study

This study aims to assess the effect of self- learning package on female students regarding future pregnancy with rheumatoid arthritis through the following objectives.

- 1- Asses knowledge of female students about Rheumatoid Arthritis.
- 2- Asses the practice of female students about rheumatoid arthritis.
- 3- Provide self-learning package to female students.
- 4- Evaluate the effect of self-learning package on female students regarding future pregnancy with rheumatoid arthritis.

Research Hypothesis

At the end of the study Utilization of self-learning package will have a positive effect on female students regarding future pregnancy with rheumatoid arthritis.

SUBJECTS AND METHODS

Research design A quasi- experimental research design was utilized in this study.

Setting The study conducted in the outpatient of rheumatology clinic -Helwan University hospitals.

Sampling A purposive sample of 60 female students were included in the study and attended to the previously mentioned setting during the study period (three months) they met the inclusion criteria and accept to participate in the study.

Inclusion criteria Female students aged from 18to 25 years.

Exclusion criteria Female students who have other autoimmune disease.

Tools of data collection

The researcher used three tools to collect the data during the study

1. **Tool I Structured Interviewing Questionnaire:** which developed by the researcher based on literature review and divided into three parts:
 - Part I** Demographic data including age, name, marital status, residence, weight, height, body mass index.
 - Part II** Health history this is tool was consisting of (Medical history, surgical history and family history). This is tool was administrated at the first meeting only.
 - Part III** Knowledge Assessment Sheet Regarding Rheumatoid Arthritis. It was concerned with the knowledge about rheumatoid arthritis such as: definition causes, signs and symptoms, high risk, complication, the effect of the disease on pregnancy as well as - life style modification and methods used to overcome the disease) This tool consists of 21 items that had a closed ended question in the form of a complete answer/ Incomplete answer/ wrong answer. This tool was distributed two times (pre and post) within a month. The researcher met the female students in the clinic so not need to google form.
2. **Tool II Assessment practice Rheumatoid arthritis quality of life (RAQOL) questionnaire. (Appendix II)** This tool was used after reviewing national and international literature. it was adapted from **Linde ⁽⁷⁾ and Maska, Anderson, & Michaud ⁽⁸⁾**. It was modified in simple Arabic language. This tool consists of 32 items with a yes/no response format, comprising statements concerning unfulfilled needs relating to social interaction (8 items), emotional well-being (9 items) and activities of daily living (15 items) relevant to participants with RA.
3. **Tool III Satisfaction Assessment questionnaire (Appendix III):** It was distributed at the last meeting which was adapted from **Mida et al. ⁽⁹⁾**. This tool consists of 7 items with Satisfied, Some extent, unsatisfied.

Tools Validity

The validity of tools was done by three experts. Maternal and newborn health nursing field they interviewed the questionnaire for content accuracy and internal validity. Also, they were asked to judge the items for completeness and clarity. Suggestions were incorporated into the three tools.

Tools Reliability

Reliability of the tools was tested to determine the extent to which the questionnaire items are related to each other. The Cronbach's alpha model which is a model of internal consistency was used in the analysis.

Ethical Considerations

The ethical dimensions of scientific research were taken into account and respected. Prior to data collection, female students provided written agreement. They were educated about the goal of the study and the expected outcomes, and

they were reassured. Furthermore, administrative consent from hospitals and the Faculty of Nursing at Helwan University is required to ensure ethical and legal issues. The study is risk-free, and participation is entirely optional. Participants have the ability to withdraw from the study at any time, for any reason. It was also told that autonomy and anonymity would be maintained, and that the data acquired would be utilised solely for research purposes. Ethics, morals, culture, and religious convictions were all upheld.

Operational Design

It includes the preparatory phase, content validity, reliability, ethical consideration, pilot study and field work.

Preparatory phase

It included reviewing of related literature and theoretical knowledge of various aspects of the study using books, articles, internet, periodicals and magazines to develop tools for data collection.

Pilot study

A Pilot study was carried out with 10% (6 female students) of the sample under study to test the applicability, clarity and efficiency of the tools. The modifications were done, then final form was developed, they were not included in the study sample.

Field work

1. An approval was obtained from a scientific ethical committee of the Faculty of Nursing - Helwan University.
2. The study was conducted from the beginning of April 2022 to the end of June 2022.
3. The researcher attended to the study setting twice weekly from 9 Am to 2 Pm.
4. Researcher was introduced herself to the rheumatologist and explained the purpose of study prior to study implementation.in order to gain their cooperation during data collection
5. The data were collected at outpatient of rheumatology clinic- Helwan University hospital
6. Female students were interviewed individually and formal consent was Obtained prior to data collection.
7. The purpose of the study was simply explained to the female students who agree to participate in the study prior to any data collection.
8. After that the researcher started to collect data from female students who attended to the clinic.
9. The researcher assess the female students knowledge regarding rheumatoid arthritis, observe signs and symptoms of rheumatoid arthritis then gave brief summary of the content such as definition, signs and symptoms, complications, the effect of the disease on pregnancy and lifestyle modifications of rheumatoid arthritis.
10. Each interview with each female students took 10-15 minutes.
11. Researcher was collected data after rheumatologist examination.
12. Researcher was distributed the booklet (as a self- learning package) for the female students participated in this study.
13. Researcher was set a subsequent visit for a follow up.
14. The researcher evaluates the effect of self – learning package on female students regarding future pregnancy with Rheumatoid Arthritis after one month after receive booklet.
15. Finally, the satisfaction of the female student was assessed.

Administrative Design

A written consent letter was acquired from the dean of the Faculty of Nursing at Helwan University to perform the study on outpatients of the rheumatology clinic at Helwan University Hospital: the approval letter mentioned the study's purpose.

Statistical Design

Numerical data were presented as mean and standard deviation (SD) values. Qualitative data were presented as frequencies (n) and percentages (%). Reliability of the questionnaire was assessed using Cronbach's alpha reliability was used to determine correlations between different variables. The significance level was set at $P \leq 0.05$. Statistical analysis was performed with IBM SPSS Statistics Version 26 for Windows.

RESULTS

Table (1) Distribution of demographic characteristics of the studied female students (n=60).

Items	Female Students (n = 60)	
	No	%
Age: Mean \pm SD	22.08 \pm 1.293	
18-22	36	60
23-25	24	40
Residence:		
1. Rural	15	25
2. Urban	45	75
Marital Status:		
3. Married	1	1.7
4. Single	59	98.3
Source of information about rheumatoid arthritis		
5. Relatives	9	15
6. Health centers	59	88.7
7. Social media	30	50
Weight:	64.267 \pm 9.51	
Height:	160.4 \pm 2.71	
BMI	20.03 \pm 2.798	

Table (1) indicates that, (60%) of the female students their age was 18-22 years with mean was (22.08 \pm 1.293). Concerning to residence; three quarters of the female students lives in urban area. Majority of the female students (98.3%) were single. Regarding the source of information (88.7%) of them reported from health center, while only 15% reported their relatives.

Table (2) Distribution of studied female students about negative future expectation (n=60).

Items	No	%
Expecting problems at time of marriage		
• Yes	46	76.7
• No	14	23.3
Expecting facing role difficulties as wife, mother or housewife?		
• Yes	48	80
• No	12	20
Expecting working after graduation		
• Yes	18	30
• No	42	70

Table (2) illustrates that, 80% of studied female students had difficulty in performing tasks of wife, mother and housewife, while only 70 % think that they wouldn't be able to work after graduation.

Table (3) Distribution of studied female students knowledge about Rheumatoid Arthritis (n=60).

Items	Pre test		Post test		X ²	P-value %
	No	%	No	%		
Definition of rheumatoid arthritis • Complete answer • Incomplete answer • Wrong answer	6 31 23	10 51.7 38.3	39 17 4	65 28.3 6.7	41.65	0.000*
Signs and symptoms of rheumatoid arthritis • Complete answer • Incomplete answer • Wrong answer	9 36 15	15 60 25	41 15 4	68.3 25 6.7	35.49	0.000*
Causes of rheumatoid arthritis • Complete answer • Incomplete answer • Wrong answer	1 16 43	1.7 26.7 71.7	47 13 0	78.3 21.7 0	87.39	0.000*
People most risky to the rheumatoid arthritis • Complete answer • Incomplete answer • Wrong answer	0 14 46	0 23.3 76.7	39 16 5	65 26.7 8.3	72.09	0.000*
Complications of rheumatoid arthritis • Complete answer • Incomplete answer • Wrong answer	2 17 41	3.3 28.3 68.3	45 15 0	75 25 0	80.47	0.000*
Diagnostic tests for rheumatoid arthritis • Complete answer • Incomplete answer • Wrong answer	2 41 17	3.3 68.3 28.3	40 15 5	66.7 25 8.3	52.99	0.000*
Treatment of rheumatoid arthritis • Complete answer • Incomplete answer • Wrong answer	3 50 7	5 83.3 11.7	30 24 6	50 40 10	31.303	0.000*
The pregnancy will not complete due to disease • Wrong answer • Correct answer	10 50	16.7 83.3	4 56	5.8 93.3	82.13	0.000*
Rheumatoid arthritis affect pregnancy • Wrong answer • Correct answer	9 51	15 85	42 18	70 30	88.696	0.000*
Rheumatoid arthritis affects women more than men • Wrong answer • Correct answer	32 28	53.3 46.7	11 49	18.3 81.7	13.974	0.01*
Smoking increases the risk of developing rheumatoid arthritis? • Wrong answer • Correct answer	26 34	43.4 56.7	10 50	16.7 83.3	10.476	0.01*
Obesity increases the risk of developing rheumatoid arthritis? • Wrong answer • Correct answer	34 26	56.7 43.3	10 50	16.7 83.3	20.881	0.000*
Foods and drinks prohibited during rheumatoid arthritis? • Wrong answer • Correct answer	54 6	90 10	18 42	30 70	59.06	0.000*
Total Mean ± SD	13.35±2.89		20.03± 3.71		t= 10.25	0.000*

*: Significant at $P \leq 0.05$

Table (3) illustrates that, there was a highly statistically significant difference among studied female students pre and posttest and Majority of the studied female students were had wrong or incomplete answer within pretest with $p = (0.000^*)$, while more than half of the studied female student were had a complete answer within posttest.

Figure (1) Distribution of the total studied female students knowledge regarding rheumatoid arthritis (n=60)

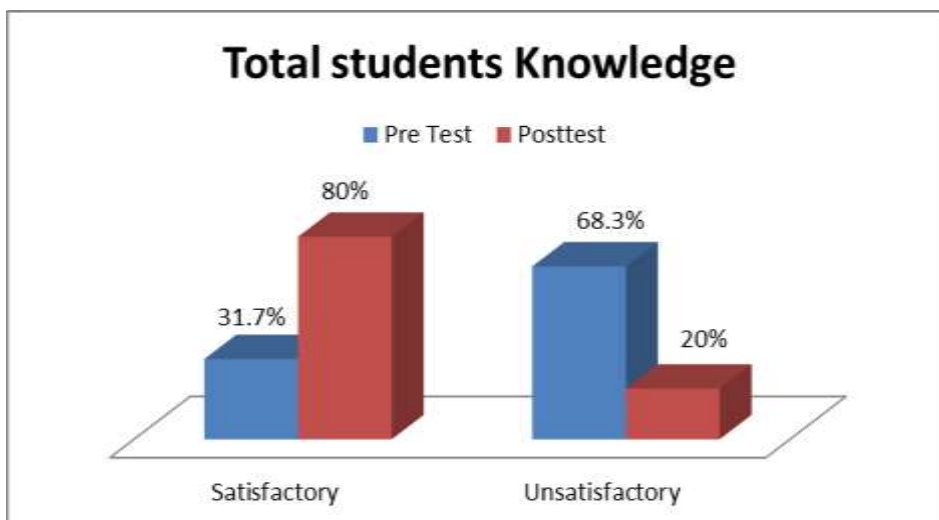


Figure (1) Total studied female Students Knowledge

Table (4) Distribution of Rheumatoid arthritis Quality of Life (RAQOL) (n=60).

Items	female students (no = 60)			
	No		Yes	
	N	%	N	%
Have to go bed earlier than would like to.	18	30	42	70
Afraid of people touching joints.	2	3.3	58	96.7
Difficult to find comfortable shoes.	10	16.7	50	83.3
Avoid crowds because the disease.	2	3.3	58	96.7
Have difficulty dressing.	16	26.7	44	73.3
Find difficult to walk to shops.	9	15	51	85
Facing problem when doing a lot of housework.	11	18.3	49	81.7
Sometimes have problems using the toilet.	10	16.7	50	83.3
Often get frustrated.	5	8.3	55	91.7
Have to keep stopping what doing to rest.	4	6.7	56	93.3
Have difficulty using a knife and fork.	19	31.7	41	68.3
Find too difficult to concentrate.	7	11.7	53	88.3
Sometimes just want to be left alone.	5	8.3	55	91.7
Find difficult to walk very far.	7	11.7	53	88.3
Find difficult to go the faculty.	7	11.7	53	88.3
Find difficult to get up faculty stairs.	6	10	54	90
Try to avoid shaking hands with people.	6	10	54	90
Often get depressed.	5	8.3	55	91.7
Unable to join in activities with the family.	10	16.7	50	83.3
Have a problem to taking a bath / shower.	19	31.7	41	68.3
Sometimes cry because arthritis.	2	3.3	58	96.7
Arthritis limits the places can go.	6	10	54	90
Feel tired, regardless to do.	7	11.7	53	88.3
Feel dependent on others.	16	26.7	44	73.3
Condition always on my mind.	3	5	57	95
Often get angary.	5	8.3	55	91.7
Too much effort to go out and see people.	7	11.7	53	88.3
Sleep badly at night.	4	6.7	56	93.3
Find difficulty to take care of the people close to.	10	16.7	50	83.3
Feel unable to control arthritis.	3	5	57	95
Avoid physical contact with other people.	2	3.3	58	96.7
Limited in the clothes can wear.	11	18.3	49	81.7

Table (4) shows that, majority of the studied female students were answered “Yes” for most of the questions related to rheumatoid arthritis Quality of Life as “Avoid crowds because of arthritis”, “sometimes have cry because of arthritis”, and “Avoid physical contact with other people” (96.7% for each question)

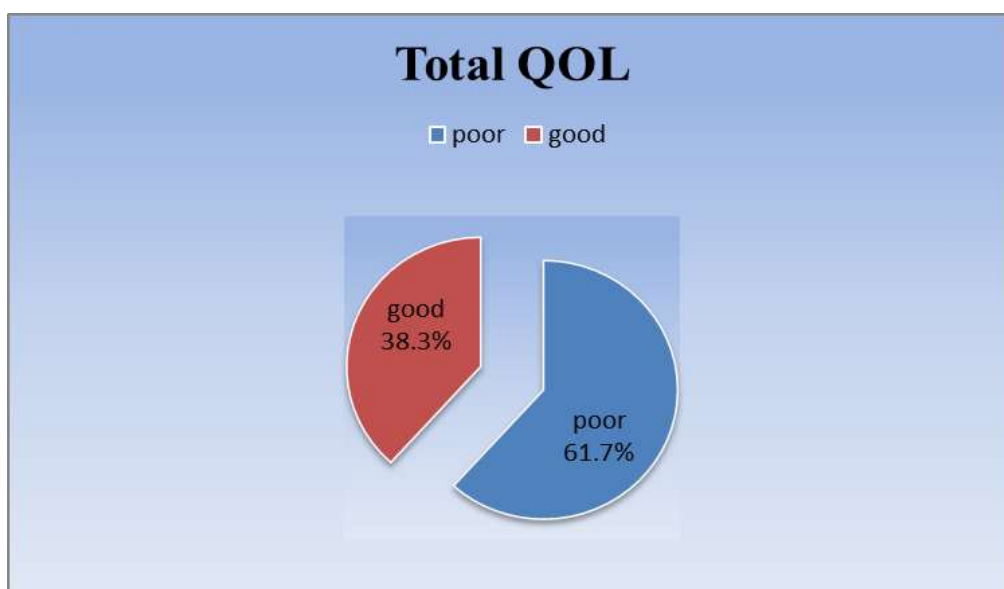


Figure (2) Total studied female students RAQOL (n=60).

Figure (2) indicates that, 61.7 % of the studied female students had poor quality of life, while 38.3% had a good QOL.

Table (5) Distribution of studied female students satisfaction (n=60).

Items	Female students (n = 60)					
	Satisfied		Some extent		Un-satisfied	
	No	%	No	%	No	%
Information provided about rheumatoid arthritis during the study	50	83.3	9	15	1	1.7
Correct practices and application of rheumatoid arthritis	50	83.3	9	15	1	1.7
Setting of study	47	78.3	13	21.7	0	0
Content of the booklet	50	83.3	9	15	1	1.7
Different treatment methods are understood	60	100	0	0	0	0
Recommend to share the booklet to others	60	100	0	0	0	0

Table (5) reveals that the majority of the studied female students (83.3 %) were satisfied related to information provided about rheumatoid arthritis during the study, correct practices and application of rheumatoid arthritis, content of the booklet, different treatment methods are understood, and recommend sharing the booklet to others, while about three quarters (78.3%) of them were satisfied regarding setting of study

DISCUSSION

Rheumatoid arthritis (RA) is a chronic inflammatory disease marked by persistent synovial joint inflammation that results in progressive joint degeneration. Effects of RA on the success of conception and pregnancy. In order to enable female students with rheumatoid arthritis become aware of actions that might improve quality of life and safe pregnancy, the self-learning package was created ⁽¹⁰⁾.

Regards to demographic data of the studied female students, the result of present study revealed more than half of studied female students age was 18-22 years.

This result disagreement with study by **Abdulrahman et al.** ⁽¹¹⁾ in study about "Pregnancy outcome in a cohort of Egyptian women with rheumatoid arthritis" and showed that the mean age was 37.84 ± 6.67 years 21–42 years.

From the researcher point of view that due to different study sample in both studied.

Concerning on Residence, the result of current study illustrated that three quarters of the female students lives in urban area.

This finding was agreement with **Rzeszutek et al.** ⁽¹²⁾ who conducted study about " Profiles of resources and body image in health and illness: A comparative study among females with rheumatoid arthritis, females with breast cancer and healthy controls National Institute of Geriatrics, Rheumatology, and Rehabilitation in Warsaw, Poland. The female participants with BC were recruited from the Magodent Oncology Hospital in Warsaw. The healthy control group was recruited from a nonclinical population among the students of various Warsaw universities." and reported that more than three quarters of the female students lives in urban area.

As regards to Marital Status, the result of present study showed that majority of the female students are single.

This finding was disagreement with **Goma et al.** ⁽¹³⁾ in Egypt at Assuit University entitled as "Impact of rheumatoid arthritis on the quality of life and its relation to disease activity" which, reported that the two thirds of their studied patients were married.

From the researcher point of view that due to social culture in upper Egypt which play an important role of of the female students before graduation.

Regarding to weight and height of the studied female students, the result of present study reported that mean 64.267 ± 9.51 and 160.4 ± 2.71 for weight and height respectively.

This finding in same line with study by **Puchner et al.** ⁽¹⁴⁾ entitled about "High burden of sexual dysfunction in female patients with rheumatoid arthritis" and revealed that mean 70.7 ± 14.6 and 165.0 ± 65.0 for weight and height respectively.

Concerning to Duration of the disease, the result of current study demonstrated that more than half of the female students suffering from the disease from 3-6 years.

This result supported with study by **Smith et al.** ⁽¹⁵⁾ who conducted study about " Factors Associated with Preterm Delivery among women with Rheumatoid Arthritis and Women with Juvenile Idiopathic Arthritis Data for this analysis were obtained from the Organization of Teratology Information Specialists (OTIS) Autoimmune Disease in Pregnancy Project, a prospective cohort study of pregnancy outcomes among women in the US and Canada. " and showed that less than two thirds of the studied women suffering from the disease from 3-6 years with mean 6.34 ± 4.67 years old.

On the other hand, are disagreed with **Cozad et al.** ⁽¹⁶⁾, their study titled " Patient Goals for Living with Rheumatoid Arthritis: A Qualitative Study in United States." reported their duration of disease ranged from less than a year to 11 years diagnosed with RA.

For expecting problems during usual activities, the result of present study showed that majority of the female students had problem during usual activities. This result supported with study by **Ziadé et al.** ⁽¹⁷⁾ who conducted study about " Perceptions of patients with rheumatoid arthritis about self-assessment of disease activity after watching an educational video" and reported that most of the studied patients had negative perception of Rheumatoid Arthritis on daily living activities.

The present study illustrated that, more than three quarters of the studied female students had negative expectation of performing tasks of wife, mother and housewife, while less than three quarters of them think that they wouldn't be able to work after graduation.

This result consistent with study by **Algothani et al.** ⁽¹⁸⁾ who conducted study about "The outcome of patients with rheumatoid arthritis" and showed that most of the studied patients mentioned that Impairment while working due to RA and Overall work impairment due to rheumatoid arthritis.

From the researcher point of view that due to course of diseases especially uncontrolled diseases. On the other hand, that marriage adds more responsibilities toward families and children as well as work, which increase stressors and consequently the risk of RA.

Regarding to female students about Lifestyle assessment, the result of present study showed that majority of the studied female students didn't exercise regularly, while less than one quarters do exercise.

This result with the same line with **Shadick et al.** ⁽¹⁹⁾ who conducted study about " The Impact of Exercise, Lifestyle, and Clinical Factors on Perceived Cognitive Function in Patients with Rheumatoid Arthritis: Results from a Prospective Cohort Study in Boston" who revealed that most of the studied patients does not perform exercise lead to impairment in cognitive function.

From the researcher point of view, these results due to the Egyptian people ignore the concept and importance the exercise.

Regarding Lifestyle assessment, the result of present study revealed that majority of the studied female students had problem during sleep.

This finding accordance with study published by **McBeth et al.** ⁽²⁰⁾ who conducted study about " Sleep Disturbance and Quality of Life in Rheumatoid Arthritis: Prospective mHealth Study" and illustrated that most of the studied patients with rheumatoid arthritis have sleep disturbances.

From the researcher point of view this result due to Pain, and fatigue, are some of the most pronounced symptoms in female student with a more severe disease progression or with a longer disease duration which lead to sleep disturbances.

As regards to total lifestyle, the result of present study showed that more than half of the studied females had a bad lifestyle, while more than two fifths had a good lifestyle.

This finding in same line with study by **Abozeid et al.** ⁽²¹⁾ entitled " Assessment of Health Promoting Behaviors among Faculty of Nursing Students affiliated to Ain Shams University " and indicated that more than one thirds of the studied students have good lifestyle.

Concerning on Knowledge about rheumatoid arthritis, the present study illustrated that there was a highly statistically significant difference among female students pre and posttest and Majority of the female students were had wrong or incomplete answer within pretest, while more than half of female student were had a complete answer within posttest.

From the researcher point of view this result due to readiness of the students to learn about their diseases to cope with them.

This result agreed with study by **Siddle et al.** ⁽²²⁾ who conducted study about " Perceptions and experiences of individuals at-risk of rheumatoid arthritis (RA) knowing about their risk of developing RA and being offered preventive treatment: systematic review and thematic synthesis of qualitative studies" and showed that there was a highly statistically significant difference among studied sample knowledge regarding rheumatoid arthritis.

Moreover, the result supported with **Ahmed et al.** ⁽²³⁾ who conducted study about " Effectiveness of Self-Management Educational Program on Quality of Life and Activities of Daily Living for Patients with Rheumatoid Arthritis." In Iraq and demonstrated that most of the studied sample had incorrect knowledge about Rheumatoid Arthritis and recommended that educational program to improve their knowledge.

Related to total knowledge about RA, the result of current study Showed that more than two thirds of the studied female students had unsatisfactory level of total knowledge in pretest scores, compared to majority of female student had a satisfactory level of total knowledge in posttest scores.

This result in same line with study by **Moghadam et al.** ⁽²⁴⁾ who conducted study about " The effect of educational program on self-efficacy of women with rheumatoid arthritis" and illustrated that self-efficacy total knowledge of the studied sample toward rheumatoid arthritis increased significantly after the intervention.

Also, In the same line of the present study results of **Ahmed et al.** ⁽²³⁾ who conducted study about " Rheumatoid Arthritis: Changing Patients' Perception toward Exercise and Level of Physical Activity" and stated that majority of the studied patients had low knowledge level in pre -test, while posttests two third of patients in study group had improved knowledge score, which indicated remarkable increasing in general knowledge comparing to control group.

From the researcher point of view the self – learning package enhance the female student awareness of RA, beliefs about future pregnancy.

Related to Rheumatoid arthritis Quality of Life, the result of present study revealed that majority of the female students were had a bad quality of life.

This result agreed with study by **Baratzadeh et al.** ⁽²⁵⁾ who conducted study entitled " Effect of Self-care Education on the Functional Status of Patients with Rheumatoid Arthritis" in the rheumatology wards of Imam Reza and Ghaem educational-research center and treatment centers in Mashhad Iran it revealed that rheumatoid arthritis has negative effect on all domain of quality of life and daily live activities.

As regard female students satisfaction, the result of present study reported that entire of the studied female students were satisfied related to information provided about rheumatoid arthritis during the study, content of the booklet, different treatment methods are understood, and recommend sharing the booklet to others, while more than three quarters of them were satisfied regarding setting of study.

This finding in same line with study by **Ziarko et al.** ⁽²⁶⁾ who conducted study entitled " Coping and Life Satisfaction: Mediating Role of Ego-Resiliency in Patients with Rheumatoid Arthritis" and illustrated that most of the studied patients had satisfaction toward Rheumatoid Arthritis.

From researcher point view, this result might be due to effect of Self Learning Package which effect fosters positive emotions but also supports the flexible selection of coping strategies adapted to the demands of the situation.

With regards to association between students' knowledge and socio-demographic characteristic, the result of present study showed that, there was a highly statistically significant correlation between female students knowledge and place of residence, while there was no statistically significant correlation between female students knowledge and their age, marital status and duration of disease. this result might be due to studied students lived at urban areas have ability to access to different health facilities.

This finding agreed with study by **Alshaikh** ⁽²⁷⁾ who conducted study about "knowledge, awareness, and perception among university students in Saudi Arabia" and reported that there was no statistically significant correlation between female students knowledge and their age, marital status and duration of disease.

On studying the Correlation between female students' knowledge, QOL, BMI, and Lifestyle, the result of current study showed that, there was highly statistically significant correlation between students' knowledge, RAQOL, MI, and lifestyle conversely,

This finding agreed with study by **Ahmed et al.** ⁽²³⁾ entitled " Rheumatoid Arthritis: Reported that there was a significant correlation between study group total knowledge score levels, and their physical, psychological, social interaction, role, and life style.

CONCLUSION

Based on the results of the present study, the following can be concluded

Current study concluded that, highly improvement of knowledge aspect post intervention, satisfied of the content of the booklet regarding to future pregnancy with rheumatoid arthritis. These results support the study hypothesis.

RECOMMENDATION

Based upon results of the current study, the following recommendations are suggested

1. Empower and motivate each female university students to adopt health lifestyle to control rheumatoid arthritis.
2. Apply a comprehensive educational program for expecting female students with rheumatoid arthritis about improve quality of life at all health facilities.
3. Replication of the study on large sample selected from different geographical areas from Egypt is recommended for generalizing the study findings.

Recommendations for further researches

4. Study the effect of self-learning package on females regarding the other immunological disease of future pregnancy.

Conflict of interest The authors declare no conflict of interest.

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