ASSESSMENT OF KNOWLEDGE, ATTITUDE AND PRACTICE

TOWARDS ATHRITIS AMONG NURSING STUDENTS

IN UNIVERSITI SAINS MALAYSIA

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UNIVERSITI SAINS MALAYSIA

2024

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By

NURMUTIAH BINTI MOHD YUNUS

Dissertation submitter in partial fulfilment of

the requirement for the degree of

Bachelor in Nursing with Honours

AUGUST 2024

CERTIFICATE

I certified that the dissertation entitled "Assessment of Knowledge, Attitude and Practice Towards Arthritis Among Nursing Students in Universiti Sains Malaysia (USM)". is a bona fide record of research work done by Nurmutiah binti Mohd Yunus during the period from September 2023 to June 2024 under my supervision. Accordingly, I have read this dissertation, which, in my opinion, conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a dissertation to be submitted in partial fulfilment for the degree of Bachelor in Nursing (Honours).

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DECLARATION

I hereby declare that this dissertation entitled "Assessment of Knowledge, Attitude and Practice Towards Arthritis Among Nursing Students in Universiti Sains Malaysia (USM)" is the result of my study and own investigations, except where otherwise stated and duly acknowledged. I also declare that it has not been previously or concurrently submitted as a whole for any other degrees at Universiti Sains Malaysia or other institutions. Finally, I grant Universiti Sains Malaysia the right to use the dissertation for teaching, research, and promotional purposes.

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ACKNOWLEDGEMENT

First and foremost, I would like to express my greatest gratitude to Allah for giving me the strength and guidance to complete the dissertation successfully.

A special thank you to my supervisor, Dr. Salmi Binti Ab Aziz, for helping me a lot through this final year project. Without her assistance and dedicated involvement throughout the process, this dissertation would have never been accomplished.

The most important and special gratitude goes to my mother for keeping supporting me endlessly. Besides, I want to thank all my colleagues for always helping me finish my thesis and all the participants in this study. Thank you for spending your valuable time answering the questionnaire.

Last but not least, I want to thank me for surviving during the whole degree life and special thanks to this one person's Billy, who always give me support to finish this thesis.

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ASSESSMENT OF KNOWLEDGE, ATTITUDE AND PRACTICE TOWARDS ARTHRITIS AMONG NURSING STUDENTS IN UNIVERSITI SAINS MALAYSIA

ABSTRACT

Arthritis and other rheumatic disorders were common diseases that caused pain, swelling, and limited mobility. They had an effect on the body's joints and connective tissue. There were over a hundred different types of arthritis, including rheumatoid arthritis, osteoarthritis, and other forms of arthritis or related disorders like gout, lupus, scleroderma, and many others. This research is aimed to assess knowledge, attitude, and practice towards arthritis among nursing students in Universiti Sains Malaysia (USM). A cross-sectional study design was conducted from 1st January 2024 to 31st March 2024 at the School of Health Sciences, USM. A total of 141 nursing students from degree and diploma were recruited via a purposive sampling method. Descriptive statistics and Pearson correlation test were used to analyse data. This study found that most of nursing students have heard about arthritis (94.3%) and their source of knowledge was from books and seminar (59%). The level of knowledge in this study showed that more participants experienced a high level of knowledge, with a mean score of 8.62 (SD = 2.36, range = 0–12). Besides, in this study mostly showed a high level of attitude, with a mean score of 22.14 (SD = 4.6, range = 0–24). The mean score for practice was 1.9 (SD = 0.12, range = 0-2), which indicates a positive practice towards arthritis. In this study, there is an association between level of knowledge and level of attitude with p- value less than 0.05 (*p = 0.001),* indicating that changes in knowledge levels were accompanied by corresponding changes in attitude levels. This study suggests that some basic knowledge about arthritis should be improved in order for nursing students to better understand everything related to arthritis.

CHAPTER 1 INTRODUCTION

1.1 Background of the study

This research is aimed to assess knowledge, attitude, and practice towards arthritis among nursing students in Universiti Sains Malaysia (USM). According to Centres for Disease Control and Prevention (2019), arthritis is an inflammation or swelling of one or more joint. It is not a single illness, but rather a collection of over 100 distinct forms of joint disorders. The most prevalent varieties of arthritis are osteoarthritis (OA) and rheumatoid arthritis, but there are also gout, ankylosing spondylitis, and juvenile arthritis, among many others.

In addition, the most frequent kind of arthritis is osteoarthritis. It happens as the protective cartilage that cushions the ends of your bones deteriorates over time. This can cause discomfort, swelling, and restricted joint mobility, especially in weight-bearing joints such as the hips, knees, and spine. Osteoarthritis is frequently connected with age; however, it can also be caused by joint trauma or obesity. Besides, rheumatoid arthritis (RA) is an inflammatory illness in which the body's immune system erroneously assaults the synovium, the lining of the membranes that surround the joints. This can result in inflammation, discomfort, and joint injury. If not treated properly, RA can cause abnormalities in several joints.

Arthritis can cause a variety of symptoms such as joint pain, stiffness, swelling, and a reduction in joint function. It can have a substantial influence on a person's mobility and quality of life. Depending on the kind of arthritis and its severity, treatment options may include medication, physical therapy, lifestyle modifications, and, in rare circumstances, surgery. Therefore, individuals with arthritis must collaborate with healthcare specialists to properly manage their illness, alleviate symptoms, enhance joint function, and avoid additional joint damage

1.2 Problem Statement

Arthritis is a highly prevalence disease in worldwide (Tang, 2019). Besides, in Malaysia it affects about five in 1000 people (Badaruddin, 2021). According to Priya et al. (2023), women are twice as likely as males to have rheumatoid arthritis (RA) which is thought to afflict 0.24 to 1% of the population. Other than that, it is estimated that more than one billion US dollars are spent yearly in the United States on joint disease surgery, the vast majority of which is related to osteoarthritis (OA) (Arthritis Foundation Malaysia, 2011). However, not everyone is aware of the existence of arthritis. Some individuals are unfamiliar with arthritis, including its definition, causes, and symptoms. This can be proved by one study that conducted in India about assessment of knowledge, attitude, and practice about rheumatoid arthritis in general population. According to the findings of the survey, around 20% of the participants did not have a thorough understanding of RA.

Another study conducted in Tabuk about knowledge, attitude, and practice regarding osteoarthritis among Saudi adults shows that, the knowledge of Tabuk population was average which indicated a need for further education of the public. This prove that knowledge about arthritis need to be expand more in order to increase people knowledge and awareness. Therefore, this study is conducted to determine, how well nursing students at USM understand arthritis, including its description, risk factors, classification, and management. It is necessary to evaluate nursing students' understanding of arthritis. This is due to the possibility that nursing students will work with patients who have arthritis during their clinical rotations or when they eventually qualify as registered nurses. When they are well informed on arthritis, they may show positive attitude and practice towards their patients while also raising awareness of the condition. Apart from

that, employment in nursing was associated with a 30% greater chance of acquiring arthritis than other professions, according to Rapaport (2017). Consequently, this demonstrated the importance of evaluating nursing students' understanding of arthritis in order to help them prevent future onset of the condition.

The consequences of not conducting this study are, the degree of knowledge, attitude, and practice of nursing student in USM about arthritis is unknown. Furthermore, awareness about arthritis cannot be promoted among them. Therefore, this study is important to determine the basic information regarding knowledge, attitude, and practice about arthritis among nursing student in USM . Furthermore, the data from this research can be used as a baseline data in creating arthritis awareness among the USM community.

1.3 Research question

The research questions for this study are as below:

1. What is the level of knowledge about arthritis among nursing students in USM?

2. What is the level of attitude about arthritis among nursing students in USM?

3. What is the level of practice about arthritis among nursing students in USM?

4. Is there any association between knowledge, attitude, and practice about arthritis among nursing students in USM?

1.4 Research objectives

Research objectives are divided into general and specific objectives.

1.4.1 General objectives

To determine the knowledge, attitude, and practice about arthritis among nursing students in

USM.

1.4.2. Specific objectives

1. To determine the level of knowledge about arthritis among nursing students in USM

2. To determine the level of attitude about arthritis among nursing students in USM

3. To determine the level of practice towards arthritis among nursing students in USM.

4. To identify the association between knowledge, attitude, and practice of arthritis among nursing students in USM.

1.5 Research hypothesis

Hypothesis 1:

- There is no significant association between knowledge and attitude towards arthritis among nursing student in USM **(H0).**
- There is a significant association between knowledge and attitude towards arthritis among nursing student in USM **(HA)**

Hypothesis 2:

- There is no significant association between knowledge and practice towards arthritis among nursing student in USM **(H0).**

- There is a significant association between knowledge and practice towards arthritis among nursing student in USM **(HA)**

Hypothesis 3:

- There is no significant association between attitude and practice towards arthritis among nursing student in USM **(H0).**

- There is a significant association between attitude and practice towards arthritis among nursing student in USM **(HA)**

1.6 Definitions of Operational Terms

Table 1.1 Conceptual and operational definitions

Terms	Conceptual Definitions	Operational Definitions
Knowledge	Knowledge is a familiarity, awareness, or understanding of someone or something, such as facts, information, descriptions, or abilities, gained by experience or education through perception, discovery, or study (Librarianship Studies & Information Technology, 2017).	In this study, knowledge refers to the knowledge of nursing student at USM about arthritis.

Attitude	Attitudes are brief assessments of persons, groups, ideas, and other items that reflect whether individuals like or detest them. In social psychology, the study of attitudes is fundamental. Decades of study have shown that attitudes are critical for understanding how people see the environment and behave (Lukas *et al.,* 2020).	In this study, attitude refers to how nursing student at USM show an attitude towards arthritis or people with arthritis.
Practice	According to American Psychological Association (2023), practice can refer to the occurrences or processes that occur in an individual when an act is repeated. It may also refer to the act of repeating when repetition is followed with an increase in efficiency.	Practice in this research refers to how nursing students at USM display their knowledge and attitude via their behaviours.
Nursing Students	Nursing student is an individuals enrolled in a nursing school or a structured educational programme leading to a nursing degree (Medical Conditions Dictionary n.d).	Nursing students at USM will be the participants in this study.

1.7 Significance of the Study

This study is necessary because it can help us determine how well nursing students understand arthritis. Besides, this study can also encourage nursing students to spread awareness about arthritis to other people, such as patients that they treat or their families. Other than that, increasing the knowledge of arthritis among nursing students can help them to show a positive attitude towards people they know who might have the disorder, such as their family, friends, patients, or even themselves. Having a positive attitude towards patients with arthritis may encourage them to improve their health since nursing students can help them understand their disease.

CHAPTER 2 LITERATURE REVIEW

2.1 Introduction

This chapter examined a body of material on the assessment of knowledge, attitude, and practice towards arthritis among nursing students at USM. Previous research on this topic, as well as diverse researchers' perspectives, were addressed and elaborated on in this literature review in order to broaden our understanding of the subject. Previous research findings were discussed and synthesized in order to improve nursing students' knowledge, attitudes, and practice towards arthritis

2.2 Arthritis

Arthritis and other rheumatic disorders were prevalent illnesses that caused discomfort, swelling, and restricted mobility. They had an impact on the body's joints and connective tissues. There were over a hundred distinct types of arthritis such as rheumatoid arthritis, osteoarthritis, and other forms of arthritis or related disorders such as gout, lupus, scleroderma, and many more. Additionally, rheumatic disorders comprised any medical condition that produced pain, stiffness, or swelling in the joints, muscles, tendons, ligaments, or bones. In addition, arthritis is also often chronic or ongoing disease. The cause of arthritis differs for each type of arthritis. For instance, the main cause of osteoarthritis is overuse or gradual joint wear and tear. Besides, scleroderma, lupus, and rheumatoid arthritis are all brought on by the immune system of the body attacking its own tissues. In addition, the accumulation of crystals in the joints is the cause of gout. Other than that, certain types of arthritis have a genetic component where individuals who bear the HLA-B27 genetic marker are more susceptible to ankylosing spondylitis.

Age, gender, and heredity are a few of the risk factors for arthritis that are unavoidable or unchangeable. Arthritis is more common among the elderly. This is due to the fact that aging changes in the matrix, such as the creation of advanced glycation end-products that alter the mechanical properties of joint tissues, and cell senescence, which results in the development of the senescent secretory phenotype (Anderson *et al.,* 2010). In addition, women are more prone than males to suffer from arthritis. This is because women's hormones affect the cartilage that acts as a cushion between the joints' bines to permit smooth joint movement. Women lose this protection against cartilage inflammation after menopause when oestrogen levels decrease (Summit Orthopedics, n.d.). Aside from that, persons with the human leukocyte antigen (HLA) class II genotype have an increased risk of developing many forms of arthritis, including rheumatoid arthritis (RA), systemic lupus erythematosus (SLE), and ankylosing spondylitis. Experts are unsure of the reason behind a person's genetic

susceptibility to arthritis, though.

2.3 Knowledge of Arthritis

Having some knowledge about any type of health problem is really crucial for us. This is due to the fact that it can help us understand more about our body health and prevent ourselves from getting one disease. Raising awareness is really important, especially in the medical field. Awareness is the knowledge and understanding of a particular activity or subject (Cambridge Dictionary, n.d). This is because raising awareness about something related to our health can help people gain knowledge about many types of diseases or health problems that they might have. Other than that, they can also increase their knowledge on how to avoid, treat, and manage their own disease. According to Communications Strategy Group (2023), health awareness campaigns lie in giving people the opportunity to take accountability for their health. In this study, we

will discuss the importance of having knowledge and raising awareness about arthritis among nursing students.

Having some knowledge about arthritis among nursing students in USM is really important. This is because, as mentioned above, a nursing student is an individual enrolled in a nursing school or a structured educational program leading to a nursing degree. Therefore, nursing students at USM might need to treat patients with arthritis every time they go to their clinical session. Besides, they can also teach or raise awareness about arthritis among their family members. This is one of the reasons why nursing students should have enough knowledge about arthritis. Besides, having enough knowledge also can help them to have a positive attitude and practice towards arthritis. In addition, according to Badaruddin (2021), rheumatoid arthritis may strike anybody at any age. In fact, eight out of every 100,000 adults between the ages of 18 and 34 have the disease. It affects around five out of every 1,000 persons in Malaysia. This proves that younger generations, such as nursing students, need to learn more and gain knowledge about arthritis so that they can help people and raise awareness in the future.

According to many researchers, level of knowledge of some people about any types of disease are still low including knowledge about arthritis. According to Alqarni et al. (2022), campaigns to raise awareness of osteoarthritis (OA) are necessary to expand the general public's understanding of it. This is due to the fact that the present study shows that the general population is ignorant of OA and the risk factors that are related with it. Lack of knowledge is one of the reasons people do not seek care when needed. This is because they don't know what disease they have or how to treat it properly. In worse cases, the disease symptoms might become worse if not treated immediately. In addition, Dunleavy and McCallion (2021) did a study titled an investigation of the knowledge and perceptions of arthritis among the student population in Ireland.

According to this study, students require greater education because there is a dearth of knowledge and awareness regarding arthritis among them. Therefore, this proves that it is crucial for us to determine the level of knowledge, attitude, and practice about arthritis among nursing students since there is no current study that has been conducted among nursing students. Besides, by doing this research study, it might be helpful to raise more awareness about arthritis especially among nursing students at USM.

2.4 Attitude towards Arthritis

According to Priya et al. (2023), 1 out of 7 participants in their study about assessment of knowledge, attitudes, and practice towards RA in the general population considered false general beliefs as true, and approximately 20% did not have depth understanding on RA. This is one of the effects of not raising enough awareness about arthritis among people. According to Elsaman et al. (2020), numerous studies demonstrate that patients' age and educational attainment are connected to their knowledge, attitudes, and practices regarding chronic rheumatic illnesses, and that individuals with these conditions lack enough information. This is another reason why we should raise awareness among the younger generations, and nursing students are one of the younger generations that can help in the future.

Apart from that, if awareness about arthritis cannot be raised, the prevalence of arthritis diseases in the world might increase. This is because, as mentioned just now, awareness can help people understand their diseases better. If people with arthritis do not understand and do not have enough knowledge about their own disease, they will not know how to treat them properly and their condition might become worse. Furthermore, if people with arthritis suffer from pain for too long without any treatment or correct management, it might have an impact on their mental health. This is due to the numerous studies that completely show that those with the most severe arthritis pain also have the

highest likelihood of being anxious or depressed (Arthritis Foundation, n.d.). This is due to the fact that living with daily pain is physically and emotionally stressful, plus depression makes pain worse.

Therefore, raising awareness about arthritis can be really helpful for people who suffer from it. Awareness can help them understand their pain and prevent them from developing a mental illness. Younger generations, such as nursing students, need to be educated more about arthritis so that they can gain knowledge and show a good attitude and practice towards arthritis.

2.5 Practice towards Arthritis

There are a lot of ways to raise awareness and improve knowledge about arthritis among nursing students, especially at USM. One of the most common ways is to make a class about arthritis. In this class, lecturers can explain arthritis in terms of its definitions, signs and symptoms, risk factors, treatment, management, and so on. Besides, lecturers can also ask students to make a presentation about arthritis so that they can understand more about it. In addition, Priya et al. (2023) recommends in their study that people attempt to enhance their knowledge, attitude, and practice of RA and other auto-immune diseases by participating in more health education programs. Nursing students at USM can also attend more health education programs that are conducted by the university or hospital. Therefore, the university needs to play an important role in conducting more health programs so that students can gain knowledge and thus show a good attitude and practice towards health problems such as arthritis.

Other than that, the CDC's Arthritis Management and Wellbeing Program has developed evidence-based public awareness campaigns to emphasize the advantages of exercise and self-management training in the management of arthritis. For African

Americans and Caucasians with arthritis who are between the ages of 40 and 65, this program encourages physical exercise. This campaign aims to improve knowledge of the benefits of physical exercise in managing arthritis pain and function, as well as in preventing additional impairment and easing symptoms of the disease. In one study conducted by Alqarni et al. (2022), the participants' restricted and improper exercise regimens, along with their lack of understanding of the benefits of exercise, caused them to turn to prescription drugs for pain relief. This suggests that there is a need for more public knowledge on the advantages of exercise for joint illness. Therefore, if such campaign will be conduct at USM for nursing students to join, it will give such a big impact to them. This is because they can improve their exercise activity, thus improving their health and preventing any type of arthritis. Besides, they can also teach adults about better exercise for arthritis in the future.

Therefore, this study is really helpful to assess the level of knowledge, attitude, and practice towards arthritis among nursing students at USM. The level of their knowledge can determine whether they have enough information about arthritis and whether they can show a positive attitude and practice towards arthritis.

2.6 Conceptual framework

The health belief model (HBM) serves as the conceptual underpinning for this investigation. HBM is a tool created in the 1950s by a group of social psychologists of the United States Public Health Service, to better understand why individuals fail to accept disease preventive techniques. This model has been refined and used to explain health-related behaviour throughout time.

The health belief model is composed of five components: perceived susceptibility, perceived severity, perceived benefits, perceived barriers and prompt to action, and self-efficacy. Perceived susceptibility is an individual's belief about the likelihood of

becoming ill, perceived severity is an individual's assessment of the seriousness of a health condition, perceived benefit is the belief about the positive outcome of health behaviour, perceived barriers is the belief about the hindrance of health action, cue of action is the readiness to take action after perceived susceptibility and benefit, and self-efficacy is the belief about one's own motivation to execute the health behaviour to produce the positive outcome. Besides, demographic factors such as age and gender, as well as psychological features like as personality and peer group pressure, may have an indirect impact on health behaviour.

Therefore, by using HBM in this study, we can assess knowledge, attitude, and practice towards arthritis among nursing students at USM.
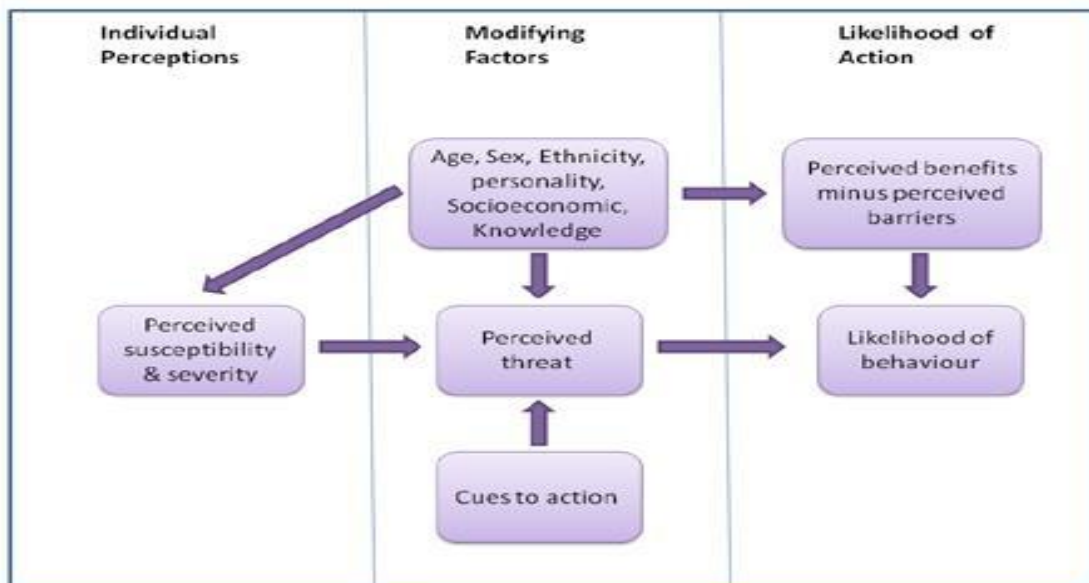
Figure 2-1The Health Belief Model adopted from Glanz, Rimer & Lewis (2002)

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Medical factors:

-   Personal history of
    arthritis.
-   Family history of
    arthritis
```

```
Accessibility to info of
Arthritis :

-   Social media
-   Healthcare workers
-   Relative
-   People with arthritis
-   Schools
-   Book
-   Internet
```

```
Nursing student
Knowledge of
Arthritis
```

```
Sociodemographic
factors :

-   Age
-   Gender
-   Year of study
-   Educational
    level
-   Knowledge
```

```
Nursing student
attitudes and practice
towards Arthritis
```

Figure 2-2 Conceptual framework of the study for knowledge, attitude, and practice towards arthritis among nursing student at USM

CHAPTER 3 METHODOLOGY AND METHODS

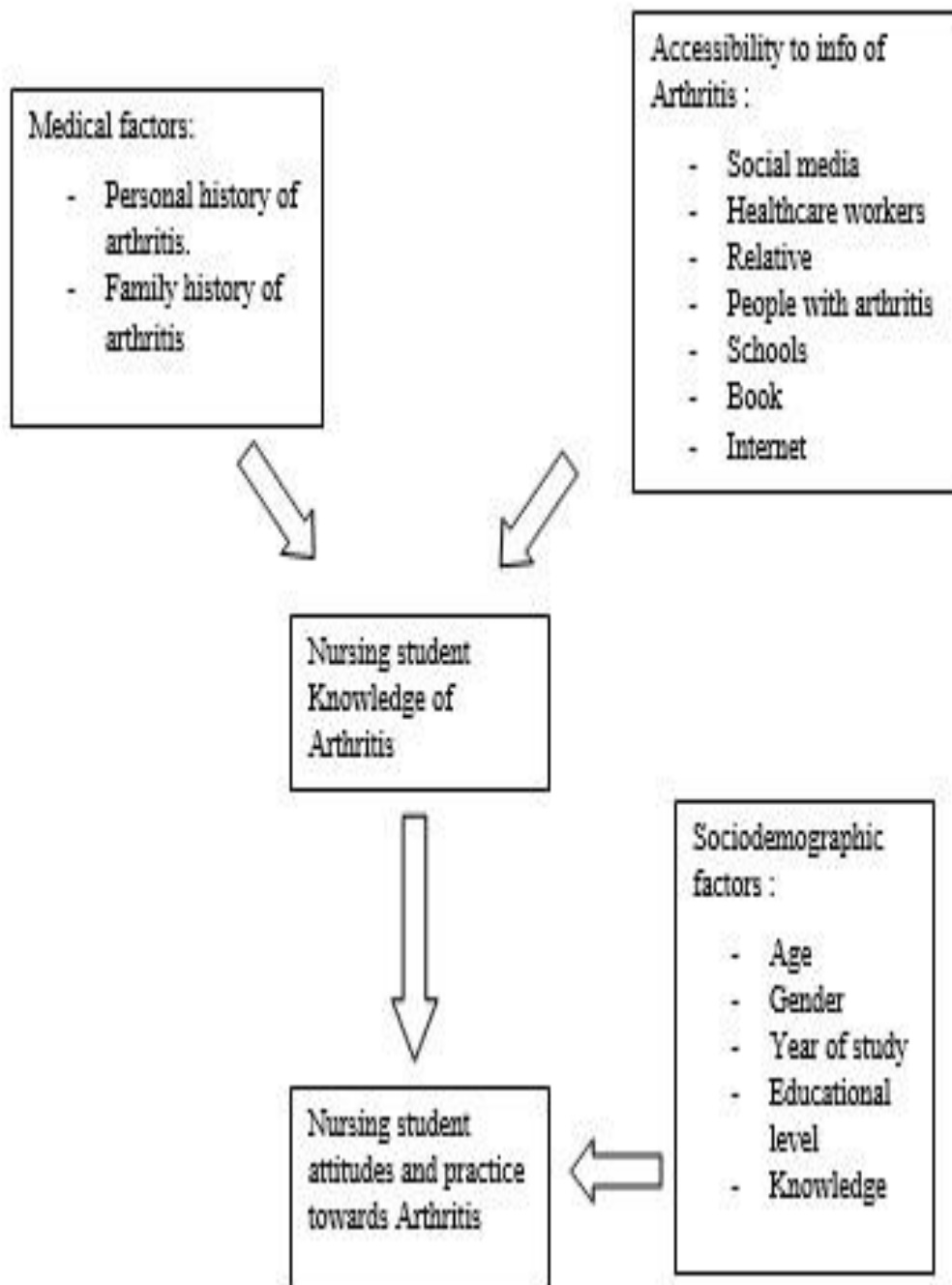**3.1 Introduction**

This chapter discussed the approach and reasoning behind the research technique used. Choosing and comprehending a suitable research design was critical to attaining the study's objectives. The chapter opened with an explanation of a cross-sectional design and the rationale for using it. Following that came a description of the research location, demographic, participant selection criteria, sampling design, sample size determination, and instrumentation, covering ethical considerations all the way to data collecting procedures. This chapter also included a part that outlined the intended statistical analyses that would be applied with quantitative data.

3.2 Research Design

In this investigation, a cross-sectional study design was used. This method was thought to be acceptable for providing a full description of the participants, who were nursing students at USM, about their knowledge, attitude, and practice toward arthritis, as well as the relationship of chosen sociodemographic factors.

3.3 Research Location

This research was carried out at Universiti Sains Malaysia (USM). The USM Health Campus proposed three schools: the School of Health Sciences, the School of Dental Sciences, and the School of Medical Sciences. This study chose the School of Health Sciences. The School of Health Sciences offered nine programs, one of which was a nursing program. The nursing program at USM offered two types of programs: degree and diploma, each with a different curriculum.

3.4 Research Duration

The duration of the data collection was in January until March 2024.

3.5 Research Population

This study's population consisted of nursing students at Health Campus University of Science Malaysia. This research recruit first-year through fourth-year nursing students regardless of diploma or degree programmed. Total population of nursing student was 262 which 129 of degree student and 133 of diploma students.

3.6 Subject Criteria

Several criteria established in ordered to guaranteed that the subject's data was appropriate for researched objectives and, as a result, capable of reached the specified goals at the conclusion of the studied.

3.6.1 Inclusion Criteria

The specific eligibility requirements for inclusion in this study required that each participant must been :

- Degree and diploma nursing student from first year to fourth year at USM .

- Would participate in the studied.

3.6.2 Exclusion Criteria

The exclusion criteria in this study were:

- Nursing students who have a mental illness.

3.7 Sampling Planned

Sampling is the process of choosing a number of subjects from a target group to serve as study participants (Chua, 2020). Sampling guaranteed the validity and dependability of study findings to be representative of the demographic under consideration. An efficient sampling procedure enables researchers to attain their study objectives.

3.7.1 Sampling Method

To recruit participants for this study, purposive sampling has been employed. Purposive sampling was a non-probability sampling strategy in which researchers utilized their discretion to select the best available sample. This approach was chosen because it best satisfies the needs of this study, since the respondent chosen best represents the population of investigation.

3.7.2 Sample Size Calculation

For first and second objective, single proportion is used in sample size estimation.

$$n = \left(\frac{z}{\Delta}\right)^2 p(1-p)$$

n = required sample size

z = value of the standard normal distribution curve cutting off probability Alpha (α) in one tail for one-sided alternative or α 2 in each tail for a two-sided alternative (z 0.05=1.96)

Δ = desired level of precision

p = estimated proportion of an attribute that is present in

the population

For first objective, to determine the level of knowledge of nursing student at USM about arthritis. Z = 1.96, Δ = 0.05, p = 9.09% (Maria et al.,2023)

n = (1.96/0.05)20.09(1-0.09)

= 127 respondents

The minimal sample size was 127 and after considering 10% of drop out, the calculated sample size is 140.

For second objective, to determine nursing student attitude

towards Arthritis. Z = 1.96, Δ=0.05, p = 2% (Vonny et

al.,2020)

n=(1.96/0.05)20.002(1-0.002)

= 31

The minimal sample size was 31 and after considering 10% of drop out, the calculated

sample size is 34.

For third objective, to identify nursing student practice

towards Arthritis. Z = 1.96, Δ=0.05, p = 9% (Hanan Ali

Alqarni et al, 2022) n=(1.96/0.05)20.009(1-0.009)

= 126

The minimal sample size was 126 and after considering 10% of drop out, the calculated

sample size is 139.

For third objective, to determine the association between knowledge and attitude towards

arthritis among nursing students in USM. Two proportion is used.

$$n = \frac{p1(1-p1) + p2(1-p2)(z\alpha + z\beta)^2}{(P1 - P2)2}$$

n = required sample size z

α = value of the standard normal distribution curve cutting off probability Alpha (α) in

one tail for one-sided alternative or α 2 in each tail for a two-sided alternative (z

0.05=1.96)

zβ = Power of study, 80% (zβ = 0.84)

p = estimated proportion of an attribute that is present in the

population p1 = Average knowledge level (Ahmed

Mohammed Elsaman, et al.,2020) p2 = Bad knowledge

level (Ahmed Mohammed Elsaman, et al.,2020)

$z = 1.96, \Delta = 0.05$, p1= 24.8%, p2= 48.4%

$$n = \frac{0.248(1 - 0.248) + 0.484(1 - 0.484)(1.96 + 0.84)\,2}{(0.248 - 0.484)2}$$

=38

The minimal sample size is 38, and after considering a 10% drop out, the sample size

calculated is 42

The bigger sample size of **140** is taken as larger sample size to help create a more

significant result.

3.8 Research Instrument

In this study, data were collected from the respondents using a structured, self-administered questionnaire.

3.8.1 Instrument

The tool used in this investigation was adapted from the article Knowledge, attitude, and practice regarding osteoarthritis among Saudi adults in Tabuk by Alqarni et al. (2022) (Appendix A). The instrument was made up of four parts: The first part of the question consisted of demographic data of the participants. The second part is to assess the knowledge of the participant about arthritis; the third part is to assess the participant's attitude towards arthritis; and the last part is to determine the practice of the participants towards arthritis.

Part 1 : Socio-Demographic Characteristics of participants

This section on characteristics of the participants consisted of 6 close-ended questioned which included age, gender, education level, years of study, question about whether they had heard about arthritis and what was their source of knowledge about arthritis.

Part 2 : Knowledge Questionnaire

This part consisted of 12 close-ended questions with "Yes", "No" and "I don't know" answers to determine students' knowledge towards arthritis.

Part 3 : Attitude Questionnaire

This part consisted of 6 statements where the respondents had given these five choices to rate their agreement : I totally agree, I agree, somewhat true, I disagree, and I totally disagree. This part was to determine students' attitude towards arthritis.

Part 4 : Practice Questionnaire

This part consists of 2 questions only and a several choices of answers were provided.

3.8.2 Validity and Reliability of Instrument

The content validity index was determined. The index was considered good if it exceeded 0.70. A pilot study was conducted to test the clarity, simplicity, and applicability of the instrument prior to the main study. During the pilot study, the questionnaire was given to 14 respondents who met similar inclusion criteria to ensure its appropriateness and comprehensibility. These 14 respondents from the pilot study were excluded from the main study. The reliability test was calculated using Statistical Package for Social Science (SPSS) version 27. The Cronbach's alpha was 0.715, which indicates acceptable reliability.

3.9 Variable

The variable used in this research study was the dependent variable and independent variable.

Table 3.1 Independent variable and dependent variable

Independent variable	Level of knowledge towards arthritis.
Dependent variable	Level of attitude and practice towards arthritis.

3.9.1 Measurement of variables and variable scoring

The second part of the questionnaire was to assess the knowledge of students towards arthritis. This section consisted of 12 questions with "yes," "no," and "I don't know" answers. To provide a mark for these questions, if they answered "correct," they would get 1 mark; if they answered "wrong," they would get 0 mark.

The third part of the questionnaire assessed students' attitudes towards arthritis. This section consisted of 6 statements, each rated on a scale with five choices to indicate their agreement: 'I totally agree' (5 marks), 'I agree' (4 marks),'somewhat true' (3 marks), 'I disagree' (2 marks), and 'I totally disagree' (1 mark).

The final section of the questionnaire assessed students' practices towards arthritis. This section consisted of 2 questions with several answer choices, designed to determine whether students exhibited positive or negative practices towards arthritis. They got 0 marks if they chose the wrong answer and 1 mark for the correct answer.

3.10 Data Collection Plan

After obtaining authorization from The Human Research Ethics Committee of USM (JEPeM) to gather data, the researcher visited class representatives from each year to obtain student contact information. Following that, all individuals were contacted via email or WhatsApp application. The researchers informed participants about the purpose of the study and the data collection technique.

If the students agreed to participate, a link was provided, and the consent form had to be completed before answering the questionnaire, which participants were required to answer honestly. The questionnaire was expected to be completed within 24 hours, and once completed, it was collected, and the responses were reviewed for completeness. The data collection technique adhered to the flowchart.

3.10.1 Flow Chart of Data Collection

Application and gaining of official approval from the Human Research
Ethics Committee (HREC) of USM and Dean of School of Health Sciences

Selection of respondent

Inclusion criteria → Exclusion criteria

Approach respondent and explain the purpose of the study

Agree → Disagree

Complete explanation through research information
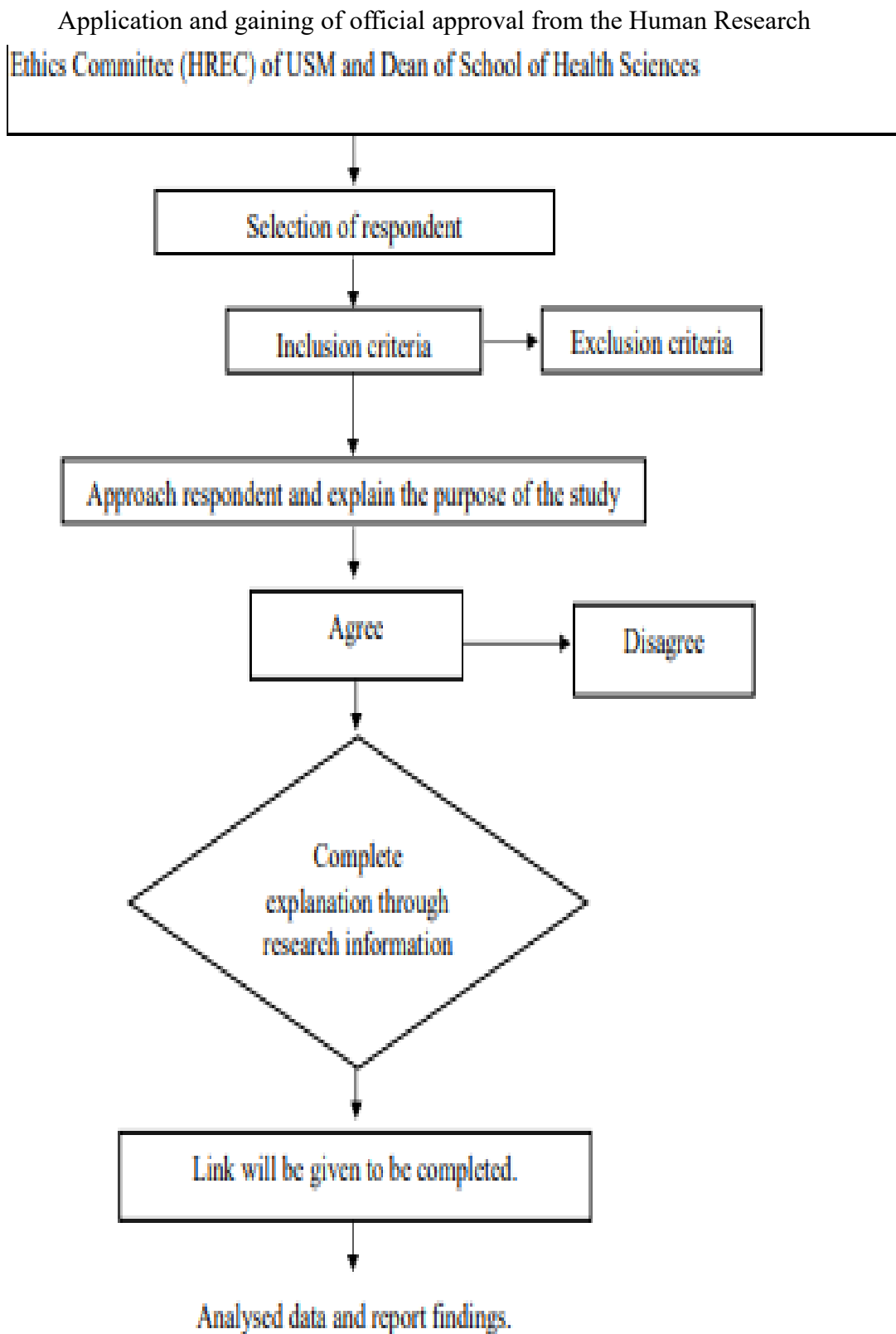
Link will be given to be completed.

Analysed data and report findings.

Figure 3-1 Data collection Flow Chart

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