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THE RELATIONSHIP BETWEEN DHUHA PRAYER AND SUNBATHING ROUTINES WITH DECREASING DEGREES OF OSTEOARTHROSIS IN THE LENDANG NANGKA VILLAGE COMMUNITY AS LEARNING MEDIA POSTER ON MOVEMENT SYSTEM DISORDERS MATERIAL FOR HIGH SCHOOL STUDENTS

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ABSTRACT

Learning media is something that is used as a mediator in providing information from the teacher to students. This research aims to determine the reduction in the degree of osteoarthritis and the development of poster learning media. The development of learning posters was carried out based on the results of research on the relationship between the Duha prayer routine and sunbathing with a decrease in the degree of osteoarthritis of Lendang Nangka Villagers. So that, it is expected to make learning process more interesting and can stimulate students to more understand about the material of movement system disorder for the Science Class students in XI Grade of High School. This research was performed in several schools under the auspices of the Thohir Yasin Foundation. The Development model used is 4-D (Define, Design, Developkent, and Disseminate). The results of this study showed a significant decrease in the degree of osteoarthritis from 8.13 (severe) to 3.95 (mild). Based on the validation results and the teacher's response questionnaire to the poster media, the results on the material and media aspects scored 4.17 and 4.40 (very good), the student response results showed a value of 4.00 (good). The average student learning outcomes increased significantly. From an average value of 66.12 to 82.50. Dhuha prayer and sunbathing are one of the therapies that can reduce the degree of osteoarthritis because when praying the knee can make maximum flexion and stretch the soft tissue around the joints and reduce stiffness and pressure on cartilage and sunbathing can convert previtamin D into Vitamin D which is good for joints and bones. Learning media products in the form of movement system disorder posters were declared feasible and received very good responses so that they could significantly increase student motivation and learning outcomes.

Keyword: Dhuha prayer, Osteoarthritis, Sunbathing, Learning media, Posters

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INTRODUCTION

Learning media is something that is used as a mediator or connecting information from a teacher to students. The goal is to stimulate students to be motivated and able to participate in the learning process in a more meaningful way (Muhammad Hasan et al., 2021). There are several types of learning media, consists of : auditory, visual, and audio-visual media. The use of learning media, especially those that are integrated with religion and science, still requires further development, especially in the form of visual media. Poster is one of the visual media in graphic form. Media development uses the 4-D development method (*Define, design, develop, disseminate*).

A poster is a written message, both in the form of pictures and writing that is intended to attract the attention of many people so that the message conveyed can be easily received by others (George R Hess, 1998). The results of research conducted by (Maiyena, 2013) show that poster media can generate new desires and interests as well as motivate and stimulate students in terms of learning (Maiyena, 2013). The advantages of posters are it is packaged attractively and the words used sparingly, can simplify and speed up understanding of the messages presented and are simple in form without the need for special equipment and easy to place.

The results of observations made at MA Banin and Banat Thohir Yasin obtained information from interviews with Biology teachers that the learning media used in the learning process at schools were only media pictures, worksheets, textbooks and LCDs. In learning process, the use of learning media that is integrated with religion especially ismalic religion is still very underdeveloped, so it is suspected to be one of the factors causing low learning outcomes in students who need more innovative media in presenting material, especially in movement system disorder material. Osteoarthritis is a movement system disorder that needs to be discussed further because it has integration with hadith, namely in the hadith of Muslim history (Khalilurrhaman AL Mahfani, 2018)

The development of instructional media has been carried out a lot, including the development of integrated science learning tools with an effective Ethnoscience approach to improve the quality of student activity and cognitive aspects (Setyo Eko, 2017), the development of application-based daily test mediasmartphone which are quite feasible to apply to learning (Haning, Diah, 2019), development of educator guidebooks that are suitable for use and need to be developed further (Siti, Agus, 2019) development of textbooks that affect learning outcomes and activities (Setya Ferywidayastuti, 2019), learning media using traditional damdam ji games which are quite effective for use in learning (Agus, Desi, 2020), development of video-based learning models that are easy to reach (I Gede Rasagama, 2020), development of discovery learning based on animation

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media that can increase content dimensions scientific literacy (Andika. et all, 2021), Development of an online acid-base science literacy test tool can increase scientific literacy and scientific investigation skills (Anita. Sri, 2021), Development of android-based games and games developed are feasible for use and practical as well as students can understand the material easily (Nadifa. Achmad, 2022)

Based on these studies, there has been no development of learning media in the form of motion system disorder posters, especially integrated with the Al-Quran and Hadith, so it is necessary to research and develop about learning media to be more innovative, interesting, concise and can increase interest and learning outcomes.

1 METHOD

This study uses development research methods with a quantitative approach. The research design uses survey and interview methods based on the lequense index. The research design used treatments arranged in a completely randomized design (CRD) with two treatments and 30 repetitions, the first treatment was not given treatment or therapy, then the second treatment was given treatment or therapy. Respondents were divided into a control group and a treatment group. Duha prayer was applied to the treatment group for one month. Then observations of disease development in the control and treatment groups were carried out every day.

RAL is the simplest design than other experimental designs. In this design there are no local controls, so the only observed sources of variability are treatment and error.

The inclusion criteria for this study were:

- a. Have health problems in joints and knees, hips, spine, and hands
- b. Willing to perform the Dhuha prayer for 1 month
- c. Age under 90 years

While the exclusion criteria in this study were:

- a. There are no health problems in the joints and knees, spine, pelvis and hands
- b. Not ready to perform Duha prayer
- c. Age over 90 years.

Furthermore, the research results that have been obtained are used as material for making learning poster media, media design is carried out with a 4-D development model (*Four D-Model*) Stages of the 4-D model development starting from the definition stage (*define*), planning stage (*design*), development stage (*development*), and the level of diffusion (*disseminate*).

The data collection instruments in this study consist of assessment or validation sheets, student response questionnaires, and questions *pretest* and *posttest*. This research phase uses a research and development model of education with a 4-D model developed by Thiagarajan. This research is intended to develop poster-based learning media and lesson plans *Pictorial Riddle* to

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improve learning outcomes and learning interest of high school students. 4-D Models consists of four stages, namely the definition stage (*define*), planning level (*design*), development stage (*develop*), and the level of diffusion (*disseminate*).

A. Define

Level *define* (needs analysis stage) is carried out to establish and define development requirements. In general, in this definition, analysis of development needs is carried out, product development requirements that suit user needs as well as research and development models that are suitable for developing products. According to Thiagarajan in Endang Mulyatiningsih (2011: 195) there are five activities carried out at this stage, that are:

- a. Front end analysis (*Front-End-Analyss*)
- b. Student analysis (*Learner Analysis*)
- c. task analysis (*Task Analysis*)
- d. Concept analysis (*Concept Analysis*)
- e. Specification of learning objectives (*Specifying Instructional*), (Endang Mulyatiningsih, 2011)

B. Design

The design stage aims to design learning devices. According to Thiagarajan in Endang Mulyatiningsih the design stage consists of four steps, that are : compiling a criterion test (*constructing criterion- referenced test*), choosing learning media (*media selection*), the selection of learning presentation forms (*format selection*), and simulate the presentation of material with media and learning steps that have been designed (*initial design*). The steps are as follows.

- a. Compiling criteria test (*constructing criterion-referenced test*)
- b. Media selection (*media selection*)
- c. Selection of the form of presentation of learning (*format selection*)
- d. Simulate the presentation of material with media and steps
- e. planned learning (*initial design*)

C. Development

The development stage is the stage for producing product development which is carried out through two steps, which consists of : (1) expert assessment (*expert appraisal*) followed by revisions, (2) development trials (*developmental testing*). Expert judgment is a technique for validating or assessing the feasibility of product designs. This activity is carried out by experts in their fields. Development trials are product design trial activities on actual subject targets.

D. Disseminate

Deployment stage (*disseminate*) is the final stage of the 4D model. The last activity of the development stage. if this stage is done so the product can be utilized by others. In the context of developing teaching materials, stages *disseminate* carried out by socializing teaching materials through distribution in limited quantities to teachers and students. At stagedisseminate In this study, the researchers gave the product to biology subject teachers at MA Banin and Bant Thohir Yasin Lendang Nangka and MA NW Halimatussa'diyah Lendang

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Nangka.

2 RESULT AND DISCUSSION

Research on the degree of reduction in osteoarthritis has been carried out in Lendang Nangka Village for 1 month with the following results. The distribution of respondents by age can be seen in table 3.1 while the status of body mass index (BMI) can be seen in table 3.1

Table 3.1 Distribution of respondents by age

No	Age Range (years)	Number of people)
1	20-30	0
2	31-40	2
3	41-50	7
4	51-60	6
5	61-70	1
6	71-80	0
7	81-90	0

From the results of the analysis of the characteristics of the research respondents, there were 16 people with the most common age group being the age group of 41-50 years with 7 people. Followed by the 51-60 year age group with 6 people, the last sequence is the 31-40 year age group with 2 people and the 61-85 year age group with 1 person.

Table 3.2 Body Mass Index (BMI) status of respondents

No	Respondent	Gender	BB (Kg)	TB (m)	IMT	Status
1	SBN	P	54,0	1,43	26,47	G
2	MHN	P	65,5	1,53	27,99	GB
3	SRH	P	65,4	1,53	27,94	GB
4	RHN	P	44,2	1,48	20,18	N
5	MND	L	60,9	1,655	22,30	N
6	JR	P	49,5	1,46	23,23	N
7	MSM	P	51,5	1,47	23,84	N
8	ZK	P	69,8	1,535	29,70	GB
9	STH	P	59	1,55	24,55	N
10	BSR	L	49	1,59	19,38	N
11	PHN	P	55	1,50	24,44	N

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12	MHN	P	49	1,47	22.67	N
13	JRH	P	40	1,52	17.31	K
14	HRD	L	76	1,60	29.68	GB
15	PJT	P	54	1,52	23.37	N
16	MSM	P	61	1,58	24.43	N

Information:

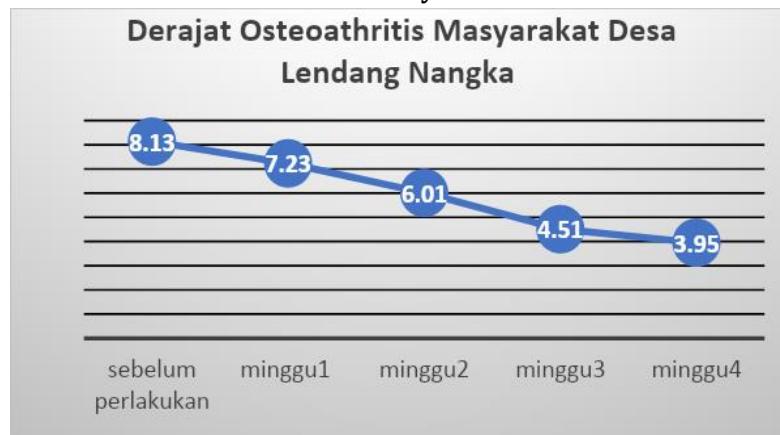
K : Less

N : Normal

G : Fat

GB : Heavy Fat

Figure 3. 1 graph of the decrease in the degree of osteoarthritis of the Lendang Nangka Village Community



Research data analysis using test *Anova one way*. One way ANOVA testing was conducted to determine the effect of information asymmetry on budgetary slack. ANOVA uses the F test. The F value of the test results (F count) will be compared with F table to reject or accept the hypothesis. ANOVA testing criteria to find out whether the hypothesis is accepted or rejected can also use the p-value. If the p-value <0.05 it is declared significant and the hypothesis is accepted. ANOVA uses the F test. The F value of the test results (Fcount) will be compared with Ftable to reject or accept the hypothesis. Below is the formula for comparing Ftable.

Hypothesis

H_0 : Duha prayer and sunbathing do not affect the reduction in the degree of osteoarthritis in the people of Lendang Nangka Village.

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H1 : Dhuha Prayers and Sunbathing Affect the Decline of Osteoarthritis in Lendang Nangka Village Community.

H0 = F count < F table

H1 = F count > F table

SUMMARY

Groups	Count	Sum	Average	Variance
6	16	134.5	8.40625	3.440625
5.5	16	118.5	7.40625	1.973958333
3	16	99.5	6.21875	2.465625
2	16	75	4.6875	2.829166667
1.5	16	65.5	4.09375	3.273958333

ANOVA

Source of Variation	SS	df	MS	F	P-value	F crit
Between Groups	208.6375	4	52.159375	18.65055	1.1E-10	2.493696
Within Groups	209.75	75	2.79666667			
Total	418.3875	79				

H1 = F count 18.55 > F table 2. 493

H1 = Dhuha Prayers and Sunbathing Affect Decreasing Degrees of Osteoarthritis in Lendang Nangka Village Community

From the data contained above it can be concluded that there was a significant decrease in the degree of osteoarthritis. Where before being given treatment the average respondent had complaints such as respondents often feeling pain in the knees and hips. This pain has been felt for about the last 4-10 months, the cause of the pain that is usually felt is when you sit too long and eat several types of food such as cassava and long beans and other foods that contain purines. what the respondent did when the pain came was to take medicine in the form of alcohol and several types of vitamins.

Respondents did not feel pain when going to bed, but the pain was felt when waking up, it took more than 10 minutes for the pain to disappear, only to be able to stand up from a sleeping position, respondents were unable to stand for more than 30 minutes, felt pain when walking, felt pain when sitting for too long and when getting up from sitting requires the help of both hands. Respondents were also unable to go around the village without rest, were only able to walk less than 1 km and sometimes less than 1 km but did not need assistive devices when walking, respondents were able to climb and descend stairs but with moderate difficulty, were able to squat and walk barefoot but with great difficulty.

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The assessment parameters used an instrument totaling 13 questions, which consisted of subscales namely pain, stiffness, and limitations of physical and social functions. On the pain subscale the intensity of pain felt in the joints, when walking, climbing stairs, at night, resting and standing. Subscale of joint stiffness felt in the morning and at night. Subscale of physical-social function limitations, questions related to the difficulty of knee OA sufferers when going up and down stairs, standing up from sitting, standing, walking on a flat surface, wearing and taking off footwear, getting out of bed, sitting, squatting, and when do both light and heavy household chores.

In the first week of treatment, changes began to occur in the form of a lighter body and walking faster, but in this first week the respondent still felt pain when bending his knees or squatting. In the 2nd week of treatment the respondents began to feel that going up and down the stairs was starting to be a little easier than before being given treatment but there was still a little difficulty. Footsteps began to feel lighter. In the 3rd week, I started to feel walking faster so that the activities went very well and my body condition in the 3rd week was not too painful. Walking barefoot still feels a little fairy. In the 4th week the body is getting lighter and the pain in the knees and hips has decreased and the most significant change is when walking feels faster than before routinely doing dhuha prayers and sunbathing.

Vitamin D is needed during childhood and adulthood, since in utero and during growth. Vitamin D deficiency can cause growth retardation and bone deformity, which in old age will increase the risk of bone fractures. Morning sunlight produces UV (ultraviolet) B rays which play a role in converting 7-dehydrocholesterol into active vitamin D. Vitamin D plays a role in increasing the absorption of calcium and phosphate, increasing bone mineralization, inducing the differentiation of immune cells.

Vitamin D is produced under the skin, with the help of UVB radiation against 7-dehydrocholesterol, it will hit the steroid nucleus causing the B ring to break at 9,10-carbon bonds, resulting in a double bond conjugated triene system. Henceforth it will produce pre-vitamin D3. This form will appear after 30 minutes of exposure to UVB rays and takes place quickly. Body heat will then cause pre-vitamin D3 to undergo isomerization into vitamin D3.

From the discussion above, it can be seen that there is a relationship between sunbathing routines and Duha prayers with a decrease in the degree of osteoarthritis. So by doing Duha prayer routine can reduce the degree of osteoarthritis significantly.

Poster Learning Media Development

The results of research on the development of poster learning media based on the

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research method used is as follows.

1. Definition (*Define*)

The initial stage in this research is the definition stage, namely by identifying problems in learning biology through some analysis.

a. Needs analysis

The needs analysis carried out in this study was observation at MA Banin and MA Banat Thohir Yasin Lendang Nangka. Observations were made by direct observation and interviews with biology teachers, namely Mr. Annas Kurniawan, M. Pd and Mrs. Baiq Tira, S. Pd and several students.

b. Student analysis

Student analysis was carried out by interviewing Biology teachers regarding the level of academic ability, learning motivation, and student involvement in the learning process.

c. Task analysis

The material studied in the development of learning media posters related to osteoarthritis. The time allocation for meetings is 2 hours or 2×40 minutes. By referring to K.D 3.6 and 4.5.

2. Planning Level (*Design*)

The design stage aims to design learning tools and data collection instruments. The learning tools arranged are in the form of lesson plans, and poster learning media. While the data collection instruments compiled were lesson plans validation questionnaires, poster learning media, and pretest-posttest. The design stage consists of four steps, namely:

- a. *Compile Pretest and Posttest*
- b. Media selection
- c. Selection of the form of presentation of learning
- d. Simulate presentation material with media and learning steps that have been planned

Data collection instrument

The data collection instruments used in this study included validation sheets, pretest and posttest questions, and student response questionnaires.

- a). Validation sheet
- b). Questions pretest and posttest
- c). Student response questionnaire

3. Development Stage (*Develop*)

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At the development stage, the researcher validated the initial drafts of poster learning media, pretest-posttest questions, and student response questionnaires that had been prepared. The results of validation and comments from expert validators and practitioners are used for improvement in revision stage I. Furthermore, the results of revision 1 become learning tools that will be tested on students. The results of the instrument trials are used for product improvement through the revision phase II. Learning tools from revision II will then be used as products in the broad test stage.

a. Validation by experts and practitioners

Poster learning media by experts and practitioners to get learning tools that are suitable for use in the learning process. While the data collection instruments that were validated by experts and practitioners were pretest-posttest questions and interest in learning questionnaires. Validation was carried out by lecturers from the Biology Science Education Study Program and Biology subject teachers. validation by experts was carried out on 6 August 2022 at Mataram State Islamic University and validation by expert practitioners was carried out on 3 September 2022 at MA Banat and Banin Thohir Yasin Lendang Nangka. With a score of 91, the media is very valid and does not need to be revised.

Table 3. 3 Results of the Analysis of the Validity of Poster Learning Media Experts

No.	Aspect	Score Rate-Rata Validator		Rate-rate	Category
		Member	Practitioner		
1.	Poster Size	4,00	4,00	4,00	Worth it
2.	Poster Design	4,77	3,72	4,24	Worth it
3.	Appearance	4,42	4,14	4,28	Worth it
total average		4,39	3,95	4,17	Worth it

Table 3. 4 Results of the Validity Analysis of Poster Learning Materials

No.	Aspect	Score Rate-Rata Validator		Rate-rate	Category
		Member	Practitioner		
1.	Compatibility of	4,66	4,66	4,66	Worth it

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	Material with SK and KD				
2.	Material Accuracy	4,75	4,75	4,75	Worth it
3.	Material Update	4,33	5,00	4,66	Worth it
4.	Encourage Curiosity	4,50	5,00	4,75	Worth it
5.	Language	4,40	4,40	4,40	Worth it
total average		4,58	4,76	4,64	Worth it

Table 3. 5 Results of Student Response Questionnaire Validity Analysis.

No.	Aspect	Shoes validator Ahli	Category
1.	meter	4,00	Worth it
2.	Language	4,00	Worth it
3.	Presentation	4,00	Worth it
Total		4,00	Worth it

1) Limited Field Test

The limited field test involved 26 students of class XI IPA at MA Banat Thohir Yasin Lendang Nangka. In this limited field test the device tested was in the form of poster learning media on the relationship between osteoarthritis, dhuha prayer and sunbathing. After carrying out the learning process using poster learning media, students fill out student response questionnaires to poster learning media which have previously been validated by expert validators and practitioners.

Based on the analysis carried out by poster learning media, it has a total average value of 90.33 in the good category, so that it can be said that poster based learning media proper to use. The Appendix presents the results of the analysis of student responses in the limited field test. Based on the results of the student response questionnaire, information was obtained that the poster learning media was good and did not need revision.

2) Extensive Test

The broad test stage was carried out to determine the quality and effectiveness of poster learning media products which has been developed to increase interest in the learning process. Products that have previously passed the validation and trial stages are then used in the broad test stage process. The broad test aims to determine the increase in student interest before and after participating in learning using poster learning media.

Learning using poster-based learning media was carried out in two meetings. Before learning begins, students first work on the questions *Pretest*. Then after participating in learning using poster learning media students work on the

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questionsposttest . Questionpretest-posttest given to determine the increase in student learning outcomes in the cognitive domain.

Student learning outcomes measured in this study are learning outcomes in the cognitive domain. Student learning outcomes can be seen from the acquisition of valuepretest andposttest. Markpretest shows learning outcomes before using posters and grades learning mediaposttest shows learning outcomes after using poster learning media. Improved learning outcomes in terms of differences in valuepretest andposttest. the increase in student learning outcomes is presented in Table 3.6

Table 3. 6 Results of Analysis of Increasing Student Learning Outcomes

Average of Value Pretest	Average of Value Posttest	Category
66,12	82,50	Good

In addition to using the pre-test and post-test, student learning outcomes were also analyzed using the N-gain results. Gain is the difference between the pretest and posttest scores. To show the quality of improving science process skills and cognitive learning outcomes of students, the normalized average gain formula is used. N-gain (normalized gain) is used to measure the increase in science process skills and cognitive learning outcomes between before and after learning.

$$N\ Gain = \frac{Skor\ Posttest - Skor\ Pretest}{Skor\ Ideal - Skor\ Pretest}$$

Table 3. 7 AnalysisNormalized Gain

Nilai Gain Ternormalisasi	Interpretasi
$0,70 \leq g \leq 100$	Tinggi
$0,30 \leq g < 0,70$	Sedang
$0,00 < g < 0,30$	Rendah
$g = 0,00$	Tidak terjadi peningkatan
$-1,00 \leq g < 0,00$	Terjadi penurunan

The result of the calculation of the normalized gain value is 0.48 ($0.3 \leq g \leq 0.7$) the normalized gain of the pretest and posttest values is included in the moderate category. So that the motion system distraction learning poster media is feasible and effective to use in the learning process.

4. Level of Spread (Disseminate)

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Spread rate (*Disseminate*) is the final stage of this research. The purpose of this stage is to disseminate poster learning media. The product was given to Biology subject teachers at MA Banat Thohir Yasin Lendang Nangka and MA Banin Thohir Yasin Lendang Nangka and MA NW Halimatuss'a'diyah Lendang Nangka. From the results of model development that has been carried out at MA Banin and Banat thohir yasin. Very good results were obtained, starting from student responses to learning poster media with the results of student response questionnaire analysis producing good responses. Learning outcomes can be seen from the results of the pretest and posttest of students, the average value of student learning outcomes is 66.12. After using poster learning media, the average student learning outcomes is 82.50. And the normalized gain analysis value is 0.48 which is included in the moderate category. So that the motion system distraction learning poster media is feasible and effective to use in the learning process.

From the results of the analysis of the characteristics the research respondents, there were 16 people with the most common age group being the age group of 41-50 years with 7 people (43.75%). Followed by the 51-60 year age group 6 people (37.50%), the last order is the 31-40 year age group with 2 people (12.50%) and the 61-85 year age group with 1 person (6.25%).

Research in 2018 in England concluded that osteoarthritis is a disease that is prone to attack elderly individuals, while research in 2019 in Indonesia also stated that the risk factors for developing osteoarthritis increased in female sex and old age, but there were also other risk factors that could causes of osteo arthritis such as ethnicity, occupation, history of trauma, and history of surgery.

The age factor and/or body mass index (BMI) status of all respondents is thought to be a factor in the occurrence of osteoarthritis. The occurrence of osteoarthritis has the same symptoms, but the causative factors can vary. Most of the triggering factors are age and BMI status.

Some of the risk factors for osteoarthritis are as follows:

1) Age

Aging Process or the aging process is considered as one of the causes of increased weakness around the joints, decreased joint flexibility, calcification of cartilage and decreased function of chondrocytes, all of which contribute to the occurrence of osteoarthritis. Based on research conducted by Gustina, et al explained that people aged > 50 years experienced 77.5% of osteoarthritis. Other studies state that people aged 51-70 have the most OA sufferers and the age group under 30 years has only a small number of OA sufferers. This proves that the older you get, the greater the risk of experiencing OA due to the decreased ability of body functions.

2) Gender

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The prevalence of OA in men before the age of 50 is higher than women. But after the age of more than 50 years, the prevalence of women suffering from OA is higher than men. This difference becomes less and less after the age of 50-80 years. This is expected because at the age of 50-80 years women experience a significant reduction in the hormone estrogen.

3) Lifestyle

Many studies have proven that there is a positive relationship between smoking increases the levels of toxins in the blood and tissue death due to lack of oxygen, which allows cartilage damage. Cigarettes can also damage the cartilage cells of the joints.

4) Obesity

Obesity is the strongest modifiable risk factor. During walking, half of the body weight rests on the joints. An increase in body weight will double the load on the joints when walking, especially the knee joints.

5) History of Trauma

Knee trauma including tears to the cruciate ligament and meniscus is a risk factor for knee OA. The Framingham study found that people with a history of knee trauma had a 5-6 times higher risk of developing knee OA. This usually occurs in younger age groups and can lead to prolonged disability and unemployment.

6) Physical Activity

Strenuous physical activity such as standing for a long time (2 hours or more per day), walking long distances (2 hours or more per day), lifting heavy objects (10 kg-20 kg) for 10 times or more per week), going up and down stairs every day.

In this study, the classification category for the highest degree of risk of osteoarthritis was the moderate degree of osteoarthritis, which had the largest number of subjects, namely 8 people (50%). Followed by a mild degree of risk of osteoarthritis in 5 people (31.25%) and a degree of risk of severe osteoarthritis as well as 3 people (18.75%). The degree or classification of the risk of osteoarthritis will increase in patients with a higher index index.

Lequesne algofunctional index can be used to evaluate pain, maximum walking distance, and daily activities of osteoarthritis patients. This instrument is in the form of a questionnaire with questions about pain or discomfort when sleeping at night, duration of stiffness in the morning or pain when waking up, pain increasing when standing for 30 minutes, pain when walking and pain or discomfort when getting up from sitting, without a second aid hand. On the maximum walking distance subscale, there are questions regarding the maximum walking distance and the need for walking aids. On the daily activity subscale there are questions, namely the ability to climb stairs, the ability to descend stairs, the ability to squat or bend the knee and the ability to walk on an uneven surface. The maximum number of points is 24 points with interpretation *handicap* 0 = none, 1-4 = mild, 5-7 = moderate, 8-10 = severe, 11 - 13 = very severe and > 14 = extreme severe.

Where the results of the study showed the average degree of community osteoarthritis before and after treatment. Before carrying out the routine of Duha prayer and sunbathing, the average degree of osteoarthritis for the people of Lendang Nangka village

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reached 8.13 in the moderate category. After carrying out the Duha prayer routine and sunbathing, the osteoarthritis degree became 3.95 in the mild category

Duha prayer routine The degree of risk of osteoarthritis is influenced by the main factors, that is the movement of Duha prayer which is equivalent to light-moderate exercise so that it can reduce the risk of developing clinical manifestations as evidenced in studies in Japan, France and India in 2009, 2016 and 2018 which stated that Muslim subjects, both elderly or those who have a history of osteoarthritis, who perform prayer services in the form of maximum and repeated flexion movements on the knees with regular intensity, there is a decrease in pain of around 15%, there is better muscle flexibility and there is an increase in functional physique.

Sunbathing can reduce the degree of osteoarthritis because the human body cannot produce vitamin D by itself. Moreover, the content of vitamin D was quite limited only from certain types of food. An easy and practical solution to sufficient vitamin D intake is to take advantage of sun exposure in the morning.

When UV radiation occurs, provitamin D will be converted into the previtamin D form, and then assisted by temperature transformation, this form will be converted into vitamin D. UV radiation on ergosterol found in plants, mushrooms, and yeast produces vitamin D2, whereas in animals, the radiation converts 7-dehydrocholesterol into vitamin D3 which can reach the blood capillaries in the dermis layer, and is transported to the liver using plasma transport proteins. So that Duha prayer and sunbathing can significantly reduce the degree of osteoarthritis with this routine.

Development of learning media using type research *Research and Development* (R & D) which refers to *4-D Models* developed by Thiagarajan (1974). The product developed in this study is a poster learning media which contains movement system disorder material. This research is motivated by several things, one of which is the limited Biology learning media used in schools is still lacking. This study aims to determine the decrease in the degree of osteoarthritis in the Lendang Nangka Village Community and to develop poster learning media worth using. And the effectiveness of the poster media.

1. Feasibility of Poster Learning Media Products

Feasibility of poster learning media can be seen from the results of the assessment carried out by the validator and the results of the analysis of the student response questionnaire.

a. Validator assessment

The results of the validator's assessment in the table show that the media design aspect has a value of 4.17 in the very good category, the material aspect has a value of 4.40 in the very good category. In addition, the validator provide suggestions and comments as input for improving poster learning media products which was carried out at the Revision I stage. Overall the poster learning media is good but there are still typos in some parts. The results of this assessment can be trusted because it was carried out by Lecturer Tadris Science Biology as an expert and one biology subject teacher as a

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practitioner.

b. Results of student responses

The student response questionnaire was validated by the validator before being used. The results of the validity analysis of the student response questionnaire are presented in Table 4.5 with the average value of all aspects of 4.00 in the good category. From the results of the validity of the student response questionnaire, it can be concluded that the student response questionnaire is feasible to use as a data collection instrument..

2. Effective Media Posters

Learning outcomes measured in this study are learning outcomes in the cognitive domain. The instrument used to measure learning outcomes is a test instrument in the form of multiple choice tests that have been arranged according to a grid. In this study, data collection on learning outcomes was carried out through *pretest* and *posttest*. Results before using the media, the average student learning outcomes of 66,12. After using poster learning media, the average student learning outcomes is 82,50.

3 CONCLUSION

Based on the results of research and analysis of research data, the following conclusions are obtained. Duha prayer and sunbathing routines can significantly reduce the degree of osteoarthritis from 8.27 moderate severity category to 3.88 mild severity category. Poster learning media which was developed is suitable for use in learning on movement system disorder material in class XI IPA MA Banat Thohir Yasin. Feasibility of poster learning media from the results of the student response questionnaire in the good category. Poster learning media can improve student learning outcomes in class XI IPA MA Banat Tohir Yasin. Before using the media, the average student learning outcomes was 66,12. After using poster learning media, the average student learning outcomes increase to 82,50.

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AUTHOR CONTRIBUTIONS

The authors collaborated and conceived of the presented idea and developed the theory and then verify the analytical methods, encouraged to investigate and supervised

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the findings of this work. The authors also discussed the results and contributed to the final manuscript.

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