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Fatigue in Rheumatoid Arthritis Benchmark Study

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Fatigue in Rheumatoid Arthritis Benchmark Study

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In Partial fulfillment of

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Dr. Kara Jones

December 5, 2021

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Executive Summary

Fatigue is perceived as one of the dominant symptoms of Rheumatoid Arthritis (RA) along with the pain that affects activities of daily life. RA-related fatigue was also described as unpredictable in its severity, duration, frequency, and intensity (Primdahl et al., 2019). The fatigue can mean feeling overwhelmed with feeling tired, unmotivated, increased pain, lack of concentration, or not getting enough sleep to combat the feeling of being tired (Choy & Dures, 2019). According to Widemark (2014), it is estimated that 40% to nearly 90% of RA patients experience chronic fatigue. The fatigue can happen at any time with RA. It is reported during remission and during flare ups of joint pain and swelling. The physiological and psychological impact that fatigue has on a patients' daily life should equally be addressed. There are medications to slow joint deformity and reduce pain, but there is no medication or defined regimen for the management of RA-related fatigue. The CDC (2020) suggests that a low cost way to improve quality of life is by getting physically active for 150 minutes a week that include walking, swimming, or biking. Physical activity has shown to effectively decrease fatigue and increase activity levels (Salmon et al., 2017). Therefore, the proposed implementation of this project is to incorporate a walking program for patients to walk for 30 minutes five days a week into the patient's plan of care to reduce fatigue.

1. Rationale for the Project

Current practices target pain management and prevention of joint deformity. Fatigue despite being unpredictable and even debilitating, is often neglected by practitioners (Rongen-van Dartel, S. et al, 2015). Whether it is due to lack of understanding or importance compared to other symptoms of RA, education and increased emphasis is needed because even when pain and joint deformity is managed pharmacologically, the quality of daily life is affected by fatigue. The addition of assessing patient's fatigue and incorporating non-pharmacologic methods, such

as physical activity in the patient's care plan, is a modifiable risk factor that can benefit patients with RA.

2. Review of Literature

The literature search was retrieved from Cumulated Index to Nursing and Allied Health Literature (CINAHL), PubMed, and Cochrane databases. Keywords used to conduct this search were: "Rheumatoid Arthritis", "fatigue", "physical activity", with limits set to the last five years; and evidence based. The focus of literature was for randomized controlled trials, meta-analyses, and systematic reviews. All support physical activity as being effective in decreasing fatigue. Four articles included are considered level I evidence to support the inclusion of physical activity into practice. Physical activity is not limited to aerobic exercise, walking, cycling, or physical therapy showed a decrease in fatigue. According to Kucharski et al, 2019, supported or guided exercise programs were more successful than exercising alone. This article also looked at various levels of intensity of physical activity. Moderate-to-high intensity aerobic were more effective compared to low intensity. These activities also show improvements in depression and overall health. If fatigue could be managed better, it would improve the quality of life for many patients. Katz et al, 2017, explored the use of pedometer, pedometer with education, and education alone of increasing physical activity. The results suggested with or without step goals the increase in physical activity was successful in decreasing fatigue versus education alone. Rheumatoid arthritis is a complex disease that has many effects on the body. Many suffer feeling alone, sleep-deprived, irritable, and even anger due to the unpredictable symptom of fatigue (Primdahl et al., 2019). This evidence supports the inclusion of physical activity into RA patient's plan of care will be beneficial in decreasing and managing fatigue.

3. Project Stakeholders

The largest stakeholders are the patient and practitioners, specifically rheumatologist. They are both essential, the practitioners will need to prescribe or incorporate the physical

activity into the patient plan of care. Comprehensiveness in care lead to patient satisfaction and improved patient outcomes which could be used as a selling point to take on the project. In presenting the change to the stakeholders it's important to communicate the benefits, expected outcomes, and potential risk associated with the implementation of the change. Transparency, communication, and the cost-effectiveness will be of value to all parties involved. Providing stakeholders with all needed information will help minimize the resistance of change which is common.

4. Implementation

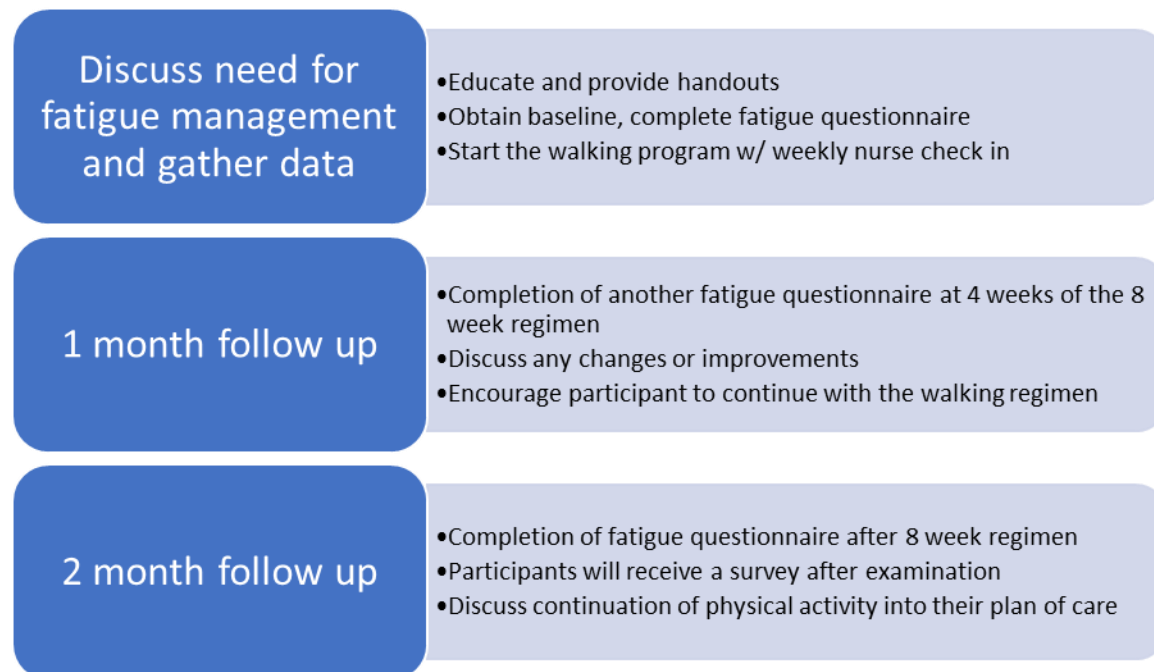
The plan is to initiate a walking program for patients to walk for 30 minutes five days a week into the patient's plan of care to reduce fatigue. This project may be challenging to implement due to the limited number of rheumatologists in the area. A barrier that may arise would be that some patients may not be able to complete a 30-minute walk in an outdoor setting such as at a track or trail. A possible solution for this barrier would be to provide a walk-in-place option. There is no additional cost to the patient to implement this walking program unless the patient prefers the gym setting or desires to keep a log of their walking on a Fitbit or smart watch. The implementation of this project will take place over twelve weeks. The first two weeks will consist of obtaining permission from the rheumatologist. The data needed are the number of RA patients, those who report fatigue, and RA patients' level of physical activity. They will be presented with a handout about the program and advised that the walking can take place in the home or any outdoor setting. The cost of the program is free unless they choose alternative methods of keeping track of their activity. The following eight weeks will begin with an assessment of the patients by the rheumatologist and completion of the Multidimensional Fatigue Inventory (MFI-20) questionnaire to establish a baseline prior to beginning a new regimen. They will participate in 30-minute walking sessions five times a week. The participating nurses will perform weekly phone calls to check in on the patients. At the fourth week of the

eight weeks of the walking regimen, the patients will complete another MFI-20 to identify any changes in their level of fatigue and to gather any additional feedback. Week eleven will consist of another examination by the rheumatologist and MFI-20 questionnaire. Upon completion of the examination, patients will receive a survey to complete and return, before leaving, about their experience with the project. In the final week, all team members will review and analyze the data to see if patient outcomes and level of fatigue improved.

5. Timetable/Flowchart

The implementation of this project will take place over twelve weeks. On the first day the team will meet to discuss the plan and the vision of the project. As the leader, it is important to establish organization and ensure that the vision is understood amongst all team members (Gallagher-Ford et al., 2019). The first two weeks will consist of getting permission from the rheumatologist, office staff, and nurses to participate. We will educate and provide handouts to all involved for reference. The gathering of the number of RA patients that are seen, who report fatigue, and RA patients that exercise will be obtained at this time. Participants will be made aware that the walking can take place in the home or any outside setting. The cost of the program is free unless one chooses alternative methods of keeping track of one's activity. The following eight weeks will start with an assessment of the patients by the rheumatologist and completion of the MFI-20 questionnaire to establish a baseline prior to beginning a new regimen. They will participate in 30-minute walking sessions five times a week. Participating nurses will perform weekly phone calls to check in on the patients. At the fourth week of the walking regimen, participants will complete another MFI-20 to identify any changes in their level of fatigue and to gather additional feedback. Week eleven will consist of another examination by the rheumatologist and another MFI-20 questionnaire. Upon completion of the examination, patients will receive a survey to return, before leaving, about their experience with the project. In

the final week, all team members will review and analyze the data to determine if patient outcomes and level of fatigue improved.



6. Data Collection Methods

The purpose of this benchmark change project is to evaluate the effects of physical activity in decreasing fatigue in patients with RA. Participants will walk for 30 minutes, five days a week over the course of 8 weeks. Data will be collected using the MFI-20 tool. The initial assessment utilizing the MFI-20 will be prior to the initiation of the walking regimen to establish a baseline of the patient's level of fatigue. It will also be completed at the four-week mark and upon completing the eight-week regimen. The MFI-20 consists of 20 questions that measures general fatigue, physical fatigue, activity, motivation, and mental fatigue. The scoring ranges from 4-20, the higher the score reflect the level of severity (Hewlett et al., 2011). Taking this data will numerically show if there is a change in the patient's level of fatigue.

7. Costs/Benefits

The cost to implement this change is free to both the clinic and patient. Patients that choose to utilize a gym or purchase a fitness watch for tracking is not necessary but patient preference. The value of this change is it has the potential to reduce cost over time. Physical activity improves cardiovascular health; which RA patients are at an increased risk for, inflammation, and weight management (Azeez et al., 2020). A decrease in risk factors that contribute to higher healthcare cost (insurance premiums, medications, diagnostics, and frequent clinic or hospital visits) in return, will be lowered.

8. Discussion of Evaluation

With limited rheumatologists in the area and the strict protocols of COVID, I was unable to implement this benchmark. Therefore, I am unable to present results. The data gathered to support this possible change in practice provides promising results if implemented.

9. Conclusion/Recommendations

The goal of this project is to improve the quality of life for patients with rheumatoid arthritis. As previously stated, fatigue is one of the dominant reported symptoms of RA. Available tools and resources are not utilized towards reducing fatigue. Physical activity is a safe and cost-effective intervention that may reduce fatigue, decrease the risk of developing additional disease processes, and improve quality of life in patients with RA.

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Appendix- Evidence Table

Citation: (i.e., author(s), date of publication , & title)	Conceptual Framework	Design/ Method	Sample/ Setting	Major Variables Studied and Their Definitions	Measurement of Major Variables	Data Analysis	Study Findings	Strength of the Evidence (i.e., level of evidence + quality [study strengths and weaknesses])
Cramp, F., (2013). Non- pharmacolo gical intervention s for fatigue in rheumatoid arthritis.	Not available	System atic review Cochra ne Central Registe r of Controll ed Trials (CENT RAL); MEDLI NE; EMBAS E; AMED; CINAHL ; PsycIN FO; Social Science Citation Index; Web of Science ; Disserta tion Abstract s	24 RCT studies 2882 participants of adults with rheumatoid arthritis	DV: fatigue IV1: physical activity IV2: psychosocial IV3: Andrographis paniculate IV4: data tracker IV5: omega-3 fatty acids IV6: Mediterranean diet IV7: reflexology	VAS	meta- analysis with a random- effects model	That physical activity and psychosocial interventions provide benefit in relation to self- reported fatigue in adults with rheumatoid arthritis.	LOE: I Strength: All patient hand RA, all studies that did not include fatigue were removed Weakness: the gender is unknown in all studies, some of the studies were not blind Conclusion: Physical activity and psychosocial therapy have a small benefit for managing fatigue. No other intervention showed difference in managing fatigue Risk or harm: injury with implementation of physical activity

Legend: RCT- Randomized Clinical Trial, VAS- Visual Analog Scale Fatigue, PROMIS- Patient-Reported Outcomes Measurement Information System, BRAF-MDQ- Bristol Rheumatoid Arthritis Fatigue-Multidimensional Questionnaire , FACIT-Functional Assessment of Chronic Illness Therapy, HAQ- Health Assessment Questionnaire, FSI-Fatigue Severity Index

Appendix- Evidence Table

		International; Current Controlled Trials Register; The National Research Register Archive; The UKCRN Portfolio Database						
Durcan, L., (2014). The effect of exercise on sleep and fatigue in rheumatoid arthritis: A randomized controlled study.	Not available	RCT	40 patients Home-based exercise intervention or usual care 38 standard care with verbal and written instructions on the benefits of exercise	DV1: Sleep DV2 Fatigue IV: Exercise	Pittsburgh Sleep Quality Index Fatigue Severity Scale.	SPSS version 18	significant improvement in sleep quality and fatigue.	LOE: II Strength: patient-based with self reported outcomes Weakness: small study Risk or harm: injury with implementation of exercise
Feldthusen, C.,(2016). Effects of person-centered physical therapy on	Not available	RCT	Hospital outpatient rheumatology clinic. 70 Participants:	DV:Fatigue IV: physical therapy	VAS BRAf-MDQ	Mann-Whitney U test	Person-centered physical therapy focused on health-enhancing physical activity and balancing life activities showed significant	LOE: II Strength: 12week and 6 month follow-up with the participants, blind randomized study, the studies primary and secondary outcome included fatigue

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fatigue-related variables in persons with rheumatoid arthritis: A randomized controlled trial			Persons with RA aged 20 to 65 years (NZ70): intervention group (nZ36) and reference group (nZ34).				benefits on fatigue in persons with RA.	Weakness: 90% of the participants were women Risk or harm: injury with implementation of physical activity
Katz, P., (2015). Role of sleep disturbance, depression, obesity, and physical inactivity in fatigue in rheumatoid arthritis.	Correlation al Reach Method	Cross-Section al Study	158 patients with RA	DV: Fatigue IV: Disease activity IV2: Sleep IV3: Depression IV4: Obesity IV5: physical inactivity	FSI RADAI HAQ PSQI	Multivariate linear regression analysis Spearman correlation coefficients Spearman correlation coefficients	inactivity was significantly associated with poor sleep, depression.	LOE: IV Strength: All students with RA diagnosis, nurse and participants were blind, Weakness: majority of the participants are female and white non-hispanic, only English speaking patients,
Katz, P., (2017). Physical activity to reduce fatigue in rheumatoid arthritis: A randomized controlled trial.	Not available	RCT	96 participants 28 Education only 34 PED 34 PED+	IV1: PED IV2: PED+ IV3: Education only DV1: fatigue DV2: depression	PROMIS	Chi-square analysis Fatigue Short Form 7a RADI-rheumatoid arthritis disease activity index	both intervention groups significantly decreased fatigue levels.	LOE: II Strength: The intervention also positively affected secondary outcomes. Weakness: Small sample size, the intensity of the activity was unknown, only capture activity when wearing pedometer Conclusion: pedometers, with and without providing step targets, was successful in increasing activity

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								levels and decreasing fatigue in this sample of individuals with RA.
Kim, S., (2021). Fatigue self-management led by occupational therapists and/or physiotherapists for chronic conditions: A systematic review and meta-analysis.		Systematic review and meta-analysis MEDLINE, EMBASE, Kim et al. 3 CINAHL, PubMed, Cochrane, OTseeker, PEDro, and Ageline.	34-RCT 2-quasi-experimental	DV: Fatigue IV1: exercise IV2: energy conservation IV3: multimodal programs IV4: activity pacing IV5: cognitive-behavioral therapy IV6: comprehensive fatigue management.	Fatigue Impact Scale (FIS; n=12), Medical Outcomes Study Short-Form Health Survey-36 Items (SF-36; n=9) for quality of life, Checklist Individual Strength-fatigue subscale (CIS-f; n=7), Fatigue Severity Scale (FSS; n=6), and Canadian Occupational Performance Measure (COPM; n=3)	narrative synthesis and meta-analysis	positive results of exercise on fatigue, quality of life, and sleep quality, regardless of the exercise type.	LOE: I Strength: randomized studies, the main focus is on exercise Weakness: narrative synthesis presented inconsistencies, high risk of bias
Kucharski, D., (2019). Moderate-to-high intensity exercise with person-centered guidance influences fatigue in older adults	Not available	RCT	74 older adults with RA ≥65 years old >2 duration of disease 36 at a gym moderate to high intensity	DV: fatigue DV2: anxiety and depression DV3: plasma metabolomic IV: moderate-to-high intensity aerobic and resistance exercise	Multidimensional Fatigue Inventory (MFI-20) VAS Hospital Anxiety and Depression Scale (HADS).	Mann-Whitney U test for non-parametric variables and Student's t test for parametric variables using	Decreased fatigue and improved symptoms of depression and were accompanied by metabolic changes in older adults with RA.	LOE: II Strength: Use of multiple scales of measurement, significant improvement in aerobic capacity, endurance and physical strength of participants Weakness: Most of the participants had low disease activity, lacks logs of the participants' sleep and self-reporting sleeping questionnaires concerning the participants' sleeping habits

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with rheumatoid arthritis			38 home based light intensity	IV2: light home-based exercise for mobility, lower body strength and balance		GraphPad Prism		that could have contributed to the understanding of changes in fatigue. Conclusion: Person-centered moderate-to-high intensity exercise decreased fatigue and lessened symptoms of depression in older adults with RA, improvements that were accompanied by metabolic changes
Pope, J. E. (2020). Management of fatigue in rheumatoid arthritis	Not available	Literature Review	Not available	DV: RA-related fatigue	PROMIS FACIT-F) BRAF-MDQ, SF-36 vitality domain (0 to 100) and PROMIS-29	Not available	fatigue is difficult with some positive data for exercise	LOE: VII Strength: Identifies the need to explore management of fatigue in RA patients Weakness: Perspective of one Conclusion: fatigue in RA is due to multiple factors such as high pain, multi-morbidity, obesity, personality and only partially from disease activity.
Primdahl, J., (2019). The experience of people with rheumatoid arthritis living with fatigue: A qualitative meta-synthesis	Malterud's systematic text condensation.	qualitative meta-syntheses PubMed, Cumulative Index to Nursing and Allied Health Literature (CINAHL), Embase, SveMed	8 qualitative articles 212 people with RA Aged between 20 and 83 years.	DV: Fatigue IV: physical impact IV2: cognitive IV3: emotional impact IV4: social impact	BRAF-MDQ	Meta-synthesis	People with RA-related fatigue experience feeling alone with their symptom and they develop their own strategies to manage fatigue in their everyday life	LOE: V Strength: Led to new overall understandings, compared with the fragmented findings of individual studies Weakness: None noted

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		Psychl NFO and Web of Science						
Rongen-van Dartel, S. A. , (2015). Effect of aerobic exercise training on fatigue in rheumatoid arthritis	random- effects model	System atic Review with meta- analysis PubMe d, Cochra ne Library, Embase , and trial register s to identify randomi zed controll ed trials (RCTs)	5 RCTs	DV: Fatigue IV: aerobic exercise	Multidimensional Assessment of Fatigue (MAF), the Short Form 36 (SF-36) vitality subscale, or a VAS	Meta- regression analyses	Positive effect of a supervised aerobic exercise program on fatigue in RA	LOE: II Strengths: Weakness: 1 study reported fatigue as a primary outcome measure, risk of bias d/t questionnaires
Salmon, V. E., (2017). Physical activity intervention s for fatigue in rheumatoid arthritis: A		A system atic review Cochra ne Central Registe r of	8 RCTs 540 participants with RA	DV: Fatigue IV: aerobic exercise IV2: pool- based aerobic exercise IV3: resistance training	VAS Short Form Health Survey (SF-36) BRAf-MDQ	Meta- synthesis	evidence of the potential for PA to be effective in reducing symptoms of RA fatigue	LOE: I Strength: There is some evidence of the potential for PA to be effective in reducing symptoms of RA fatigue. Weakness: further work is needed to identify the optimal PA intervention for fatigue

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systematic review.		Controlled Trials (CENTRAL); MEDLINE; EMBASE; AMED;		IV4: range of movement exercises IV5: yoga IV6: Tai Chi				management that meets the needs of people with RA. The type, frequency, duration and intensity of PA varied between studies.
Santos, E. J. (2019). Effectiveness of non-pharmacological and non-surgical interventions for rheumatoid arthritis: an umbrella review.	Joanna Briggs Institute methodology	Quantitative systematic reviews with or without meta-analysis	91 RCTs 9 Observational studies 6740 participates	DV: pain DV2: functional DV3: disability DV4: fatigue DV5: emotional well-being DV6: sleep DV7: coping DV8: physical well-being IV: nonpharmacologic interventions IV2: non-surgical interventions	VAS, HAQ, FACIT, Rheumatoid Arthritis Impact of Disease (RAID)].	narrative synthesis	Only multicomponent or single exercise/physical activity interventions, psychosocial interventions and custom orthoses seem to reduce the impact of rheumatoid arthritis.	LOE: I Strength: large number and variety of RCTs Weakness: lack of patient characterization Conclusion: The interventions of physical activity, psychosocial, and orthoses should efficacy in reducing the impact of RA Risk: injury or inability to perform assigned physical activity

Legend: RCT- Randomized Clinical Trial, VAS- Visual Analog Scale Fatigue, PROMIS- Patient-Reported Outcomes Measurement Information System, BRAF-MDQ- Bristol Rheumatoid Arthritis Fatigue-Multidimensional Questionnaire , FACIT-Functional Assessment of Chronic Illness Therapy, HAQ- Health Assessment Questionnaire, FSI-Fatigue Severity Index