ORIGINAL ARTICLE

Disease Knowledge and Functional Disability of a Cohort of Rheumatoid Arthritis in a Tertiary Government Hospital in Manila, Philippines

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ABSTRACT

Background. Rheumatoid arthritis (RA) is a chronic and progressive disease resulting in disability and poor quality of life. Patients' knowledge (PxK) of disease can contribute to better disease control, reduced disability, and improved quality of life.

Objective. The objective of this study was to determine the disease knowledge and functional disability of a cohort of patients with RA.

Methods. We conducted a cross-sectional study among patients with RA at the University of the Philippines-Philippine General Hospital Arthritis Clinic. The subjects were recruited using convenience sampling over three months in 2019. We obtained demographic and disease characteristics, clinic attendance, patient knowledge, and functional status through chart review, a questionnaire, and a disability index. Descriptive statistics, 2-sample T-test, Pearson's correlation, analysis of variance (ANOVA), and multiple linear regression analysis were used for data analysis. Informed consent was obtained before participation in the study.

Results. Eighty percent (57/71) of recruited patients participated in the study. All were female, and the mean age was 51.6 years (±12.9). Most participants completed secondary education, were employed, had an average duration of RA of 8 (±6.8) years, had been consulting at the Arthritis Clinic for an average of 4.8 years (±3.8), and had moderate disease activity (49.1%). Most patients had American College of Rheumatology (ACR) class I or II functional status (50/57, 88%). The usual source of the patients' knowledge about RA was their physician.

The mean knowledge score was 5.10 (±0.93) out of a perfect score of 9. Most patients were aware of their disease diagnosis and the non-communicable nature of RA. There was low awareness of the need for self-monitoring for disease flares or treatment adverse events and the extra-articular involvement in RA. The mean functional disability score was 6.65 ± 5.33, and the mean functional disability index (FDI) was 0.83 (±0.66). These correspond to mild functional disability (FD).

There was no significant relationship between the total knowledge score and age, duration of disease, number of consultations in the past year, level of education, employment status, perceived level of disease knowledge, or the practice of asking their physician about illness. Perception of overall health status was associated with functional disability (p=0.001).

Conclusion. Most of the patients in our cohort of RA patients had a mild functional disability and low knowledge scores. The study identified the gaps in our patients' knowledge of disease and its management. A re-evaluation of existing educational and treatment strategies will be beneficial to enhance disease knowledge and improve health outcomes.

Key Words: patient knowledge, health assessment questionnaire, functional status, rheumatoid arthritis, Philippines

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INTRODUCTION

Rheumatoid arthritis (RA) is a chronic, painful, and progressive disease leading to functional disability and decreased quality of life.[1] Functional disability is a strong predictor of work disability, morbidity and mortality, and sometimes manifests before RA is diagnosed. In a study by Myasoedova, the prevalence of functional disability among patients with RA was at least 15% one to two years before disease diagnosis.[2]

One of the cornerstones in the treatment of RA is the prevention of disability through timely control of inflammation and achievement of disease remission. Remission in various clinical trials ranges from 9-51% and is more likely with early and targeted intensive intervention.[3] This requires that both the physician and patient work closely together to achieve the remission goal successfully. Studies on patients' behavior, however, show suboptimal treatment adherence. This has, in turn, been linked to a lack of confidence in RA self-knowledge and fears of side effects.[3,4]

Maintaining good physical activity and a healthy diet are essential parts of managing RA. The study of Skoczynska showed that RA patients' adherence to a healthy diet remains low despite an abundance of data confirming positive effects of healthy foods, i.e., fish rich in n-3 PUFAs, and negative effects of foods high in fat or sugar on the disease activity of RA.[5] Verhoeven et al. found suboptimal physical activity among RA patients. The main obstacles identified were patients' lack of motivation and disease knowledge and the rheumatologists' lack of emphasis on promoting physical activity.[6]

Hence, patient education (PxEd) should be an integral part of managing chronic rheumatic diseases. It increases patient involvement to maintain and improve health and slow the deterioration of the disease.[7,8] A French study in 2009 showed that tailored educational programs could produce lasting improvements in disease knowledge, lessen anxiety, and improve treatment adherence for better disease control.[9] The European League against Rheumatism (EULAR) recommends that "the content and delivery of patient education should be individually tailored and needs-based for people with inflammatory arthritis."[8]

In the Philippines, the prevalence of RA is 0.17%.[10] There is a lack of information on patients' disease knowledge. This study aimed to gain insight into the level of disease knowledge of patients with RA in the Philippine General Hospital (PGH). It is a government-funded tertiary training hospital with an Arthritis Clinic handled by rheumatologists.

The main objective of this study was to determine the disease knowledge and functional disability of a cohort of RA. An additional exploratory purpose was to determine a possible relationship between patient knowledge, functional disability, characteristics, and disease status.

METHODS

Study Design, Setting, and Population

This was a cross-sectional study using convenience sampling. All consecutive patients ≥18 years old who fulfilled the 2010 American College of Rheumatology - European League against Rheumatism (ACR-EULAR) criteria for the classification of RA, had at least three clinic visits and signed informed consent were included. We excluded patients with cognitive dysfunction.[11]

The patients were recruited from the PGH Arthritis Clinic from August to October 2019. We computed a sample size of 55 patients to achieve a 95% confidence level and 90% confidence interval (margin of error) in determining patient knowledge and functional disability. To determine the relationship between patient knowledge, functional disability, and patient factors, a sample size estimate of 97 was obtained.

Questionnaire Development

The Division of Rheumatology developed the PGH Arthritis Knowledge Questionnaire (PGH-ArKQ). It was designed to determine the Filipino participants' knowledge of arthritis and identify gaps that needed to be addressed in patient education.

The questionnaire was developed *de novo* in Filipino and had two parts. The first part is obtained through chart review and interview and inquires demographic characteristics (gender, age, education, and employment), clinical data (disease duration, disease activity score (DAS-28) and classification, ACR functional status, medical consultations), sources of disease information, patients' degree of participation during consultations and their perceptions about their level of disease knowledge and overall health condition. The second part is a self-administered quiz and consists of nine multiple-choice questions that pertain to the following aspects of arthritis disease knowledge: disease diagnosis, causes and risk factors, organ involvement, disease monitoring by physician and patient, complications of untreated disease, and management. A panel of eight rheumatologists made a list of essential questions to test patients' knowledge about arthritis. It narrowed them down to nine questions with multiple possible replies (options) formulated in Filipino. A pilot test of the questionnaire was conducted among 10 RA patients. The questionnaire was modified based on their feedback about clarity, sequence of questions, and layout. The second version of the questionnaire was administered to 12 RA patients and was deemed straightforward and easy to comprehend.

Determination of Functional Status

Functional status was one of the clinical characteristics to be determined in the study. It was measured through the modified Stanford Health Assessment Questionnaire (HAQ), a self-administered questionnaire completed in approximately 5 minutes.[12] It is one of the most commonly used, objective, and accurate methods to quantify the impact of RA on the individual's daily functions.[13] In 1993, Dans et al. validated the modified Stanford HAQ for use among Filipino patients; this validated version was used in our study.[10]

Data Collection

After signing the informed consent, each participant answered the questionnaire. The investigators checked that each questionnaire was appropriately completed. The medical chart was reviewed, and the patient was interviewed and examined to obtain clinical information regarding disease status, including the DAS-28 score and the ACR functional class.

The DAS-28 score reflects the level of RA disease activity. It includes a count of tender and/or swollen joints out of 28, erythrocyte sedimentation rate, and a general health assessment on a visual analog scale. The range of the DAS-28 is 0–9.4. There is low disease activity if DAS-28 ≤3.2, moderate if between 3.2 and 5.1, and high if >5.1. A DAS-28 <2.6 corresponds to being in remission according to the ACR criteria.[14]

The ACR classification criteria of functional status of RA reflect the individual's global ability to perform activities of daily living (ADLs), including self-care, vocational, and avocational activities. Self-care activities include dressing, feeding, bathing, grooming, and toileting. Avocational (recreational, leisure, or both) and vocational (work, school, homemaking) activities are patient-desired and age- and sex-specific. The functional class ranges from I to IV, wherein I refers to complete ability to perform ADLs, while IV refers to limited ability to perform all ADLs.[15]

The functional disability score was the total of the eight category scores of the Stanford HAQ, namely dressing, arising, eating, walking, hygiene, reach, grip, and activities. Each category has two to three questions. Scoring within each category was 0 (without any difficulty) to 3 (unable to do). The worst score in any question within the category was considered the category score. If another individual's aide or a device was required in performing an activity, the minimum recorded category score was automatically 2. The HAQ score divided by eight is the functional disability index (FDI). The classification of disability corresponded to the FDI (in parentheses) as follows: mild (0-1), moderate (1.1-2.0), and severe (2.1-3.0).[12]

The knowledge score was obtained from Part 2 of the PGH ArKQ, composed of 9 questions. Each correctly answered question was equivalent to 1 point. A full point was earned for items with multiple answers if all the answers were correct; a fraction of a point if only some were correct.

All data were anonymized and encoded into a standardized data collection form.

Statistical Analysis

R software was used for data entry, management, and analysis. Data were screened for missing values and outliers. Outliers were checked against raw data, and if there was any mistake, it was corrected manually. A level of significance of 0.05 was used in all the tests. Descriptive statistics were used to present patient characteristics, with frequency and percentage used for qualitative variables, mean, standard deviation (SD), and range for quantitative variables. To attain the main objective, determination of knowledge score and functional disability, the mean, range, and SD were obtained.

The minimum sample size of 97 to detect differences between characteristics of patients with varying levels of knowledge or functional disability was not reached during the study period. However, the study team proceeded to do exploratory analyses. The information gained from the exploratory analyses may guide the conception and design of future studies.

Correlation (Pearson's product moment correlation) was used to measure the linear relationship between knowledge and age, disease duration, and the number of consultations in the past year. Correlation between FDI and knowledge score, age, duration of illness, and the number of consultations for the past year was also obtained. Independent 2-sample T-test was used to examine the relationship between a continuous variable (knowledge score or FDI) and categorical variables. In particular, the relationship between the knowledge score and the perceived level of disease knowledge, education, employment, and the practice to ask their physician was determined. The same test was done for FDI and education, employment, and disease activity. The following were the assumptions used in the 2-sample T-test: (i) two-sided test; (ii) non-equal variances; (iii) categories or levels are independent; (iv) level of confidence is 95%. Meanwhile, ANOVA is a parametric method used to compare the FDI of individuals with different categories of perceived overall health status (good/very good, moderate, bad/very bad). Multiple linear regression analysis was done to evaluate further the independent effects of variables (disease knowledge, age, level of education, employment status, disease duration, number of doctor consultations, disease activity, and perceived overall health status) that on univariate analysis were found to have significant effects on functional disability score.

RESULTS

Patient characteristics

Fifty-seven of the 71 RA patients encountered during the study period consented to participate in the study (80% response rate). The cohort was all female with a mean age of 51.6 (±12.9) years. Most had completed secondary education and were employed. Four patients had the disease for less than two years; the rest had a longer disease duration (Table 1). Most of the patients had been consulting at the PGH Arthritis Clinic for a mean duration of 4.8 (± 3.8) years. The average number of consultations was 4.2 (± 1.8)/year.

All patients indicated that their primary source of information about their condition was their attending physician. Thirty-six patients (63.2%) relied solely on their physicians for information.

Approximately 49% had moderate disease activity during the survey, and 42% had low disease activity or remission. Most patients (88%) had ACR I and II functional status. There was a perception of good to very good overall health status in 43.86%. Almost half of the population (47.37%) frequently or consistently asked their doctor about their disease. Forty percent perceive their disease knowledge to be good or very good.

Table 1. Characteristics of the included participants

Variables	Frequency (%)
Age of Patient	51.65 ± 12.87
Sex	
Female	57 (100.00)
Education	
Elementary and High School	30 (52.63)
College and Undergraduate	27 (47.37)
Employment	
Employed	32 (56.14)
Not Employed	25 (43.86)
Duration of disease (in years)	8.01 ± 6.82
Number of medical consultations in the past year	4.19 ± 1.77
Disease activity (based on DAS-28 score)	
Remission and Low	24 (42.11)
Moderate and High	33 (57.89)
Practice of asking the doctor about an illness	
Frequently and Always	27 (47.37)
I do not, Rarely, and Sometimes	30 (52.63)
Perceived level of knowledge	
Very Much and Much	23 (40.35)
Not So Much, A Little, and None	34 (59.65)
Perceived overall health	
Very Good and Good	25 (43.86)
Moderate	21 (36.84)
Bad and Very Bad	11 (19.30)
Sources of Information about Disease	
Doctors	57 (100)
Friends/Family	15 (26.3)
Internet	13 (22.8)
TV and/or radio	11 (19.3)
Books and/or magazines	6 (10.5)
Modified Stanford HAQ score	
Mean ± SD	6.65 ± 5.33
Total Knowledge Score	5.10 ± 0.93

Disease Knowledge

The mean overall knowledge score was 5.10 (± 0.93). The items correctly answered by the most number of patients were diagnosis and the non-communicable nature of RA (Table 2). Most of the respondents did not correctly answer the questions on self-monitoring for disease flares, adverse events, or extra-articular involvement. The questions that dealt with non-pharmacologic measures, disease complications, disease monitoring by physicians, causes and risk factors, and pharmacologic treatment had partial correct answers from most respondents.

The distribution of responses for questions with multiple correct answers is shown in Table 3. Only a third of the participants were aware that genetics might have a role in disease causation. Fewer patients were aware of smoking as a risk factor. Dietary modification (43.9%), weight loss (26.3%), and cessation of intake of alcohol (10.5%) were considered important non-pharmacological interventions by more patients than smoking cessation (8.8%).

The majority of respondents were not aware of possible extra-articular involvement in RA. Kidney (22.8%) or eye involvement (19.3%) were the organs most commonly identified to be affected possibly.

Most respondents indicated that follow-up consultations were needed to determine disease activity. However, the majority did not consider that return visits were necessary for medication dosage adjustment or determination of adverse effects of treatment. Less than a third of our patients considered consulting with their physician earlier when they had progression or recurrence of joint pains, other symptoms, or possible adverse drug reactions. Very few patients considered muscle weakness, disability, or death as potential complications of RA.

Table 2. Disease knowledge based on responses to the PGH ArK Quiz

Aspect of knowledge	Mean Score (±SD)	Frequency (%) of Answers, n=57		
		Correct	Partially correct*	Incorrect
Diagnosis	0.88 (0.33)	50 (87.7)	not applicable	7 (12.3)
Causes/Risk factors	0.50 (0.36)	0	40 (70.2)	17 (29.8)
Disease communicability	0.96 (0.19)	55 (96.5)	not applicable	2 (3.5)
Extra-articular disease involvement	0.28 (0.35)	2 (3.5)	26 (45.6)	29 (50.9)
Disease monitoring by a physician	0.60 (0.26)	11 (19.3)	45 (79.0)	1 (1.8)
Self-monitoring	0.15 (0.18)	1 (1.8)	29 (50.9)	27 (47.4)
Complications	0.33 (0.25)	1 (1.8)	49 (86.0)	7 (12.3)
Non-pharmacologic measures	0.65 (0.28)	0	52 (91.2)	5 (8.8)
Pharmacologic treatment	0.74 (0.22)	18 (31.6)	37 (64.9)	2 (3.5)

**In questions with multiple correct answers, some options were correctly answered*

Functional Disability

The mean total HAQ score was 6.65 (± 5.33), and the mean disability index was 0.83 (± 0.66). This corresponds to mild functional disability. Around a third of the patients had overall moderate to severe functional disability. The activities with the highest number of moderate to severe disabilities were grip, walking, and arising (Figure 1). The activity with the least disability was eating. Performing usual activities, like housework, going outside the house for personal needs, or getting in and out of a vehicle, had the most number of patients with severe difficulty.

Table 3. Respondents' replies to items with multiple correct answers

Aspects of knowledge	Correct answers	Frequency (%)
Risk factors	Genetics	22 (38.6)
	Smoking	3 (5.3)
Extra-articular involvement	Kidneys	13 (22.8)
	Eyes	11 (19.3)
	Lungs	8 (14.0)
	Heart	6 (10.5)
	Skin	5 (8.8)
Disease monitoring	Improvement of symptom	45 (78.9)
	Adjustment of drug dosage	24 (42.1)
	Presence of side effect	6 (10.5)
Self-monitoring	Progressive and severe joint pains	16 (28.1)
	Recurrence of flare	12 (21.1)
	Presence of other symptoms	7 (12.3)
	Presence of side effect	2 (3.5)
Complications	Progressive joint pain	40 (70.2)
	Joint damage and deformity	24 (42.1)
	Muscle weakness	10 (17.5)
	Disability	6 (10.5)
	Death	5 (8.8)
	Fracture	3 (5.3)
	Extra-articular symptoms	3 (5.3)
Non-pharmacologic intervention	Exercise	46 (80.7)
	Smoking cessation	5 (8.8)
Pharmacologic intervention	Regular intake of medications	51 (89.5)
	"As necessary" intake	19 (33.3)

Relationship between Disease Knowledge and Patient Factors

The required sample size to determine the effect of patient factors on disease knowledge was not met. In this preliminary analysis, we found no significant relationship between the total knowledge score and the following variables (Tables 4 and 6): perceived level of disease knowledge (t=0.46), level of education (t=0.70), employment status (t=0.98), the practice to ask a physician about illness (t=0.30), age (r=-0.04), duration of disease (r=0.14), and a number of consultations in the past year (r=0.06).

Relationship between Functional Disability and Various Variables

The required sample size to determine the effect of patient factors, including disease knowledge, on functional disability was not met. However, there was an association between functional disability and disease knowledge (r=0.23, p=0.08). Likewise, there was a trend for association between FDI and age (r=-0.22, p=0.09) and significant association with disease activity (t=3.35, p<0.001) and perception of overall health status (F=11.52, p<0.001, see Tables 4 to 6).

On multiple regression analysis (Table 7), perception of overall health status was the only variable independently associated with functional disability. Approximately 42% of the variation in the FDI can be explained by the regression model (disease knowledge, age, duration of illness, disease activity, number of consultations per year, employment, education, and perception of overall health status).

DISCUSSION

The study results show that our cohort of patients with RA in the PGH Arthritis Clinic had low knowledge scores. This was despite their relatively high level of school education and long duration of follow-up at the Arthritis Clinic. This may imply that existing patient education activities during in-person consultations and lectures delivered once

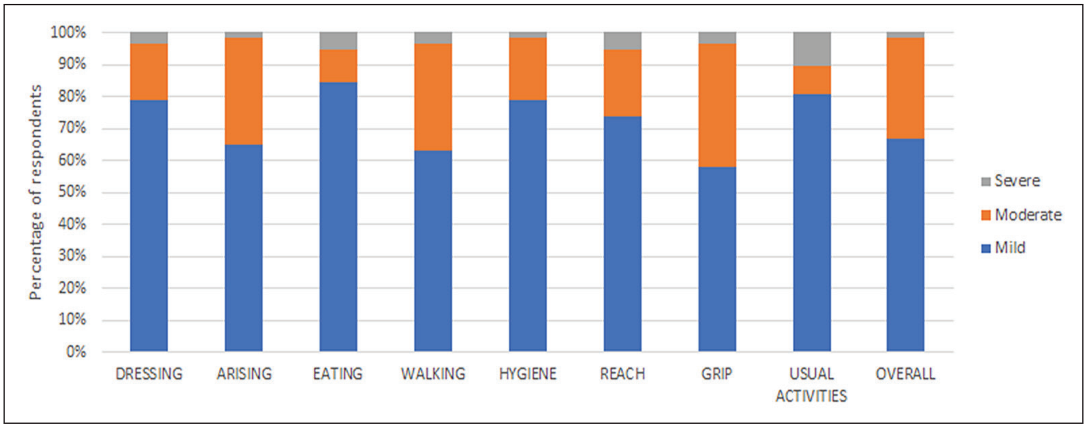

Figure 1. Distribution of patients according to functional disability using modified stanford HAQ (n=57).

Table 4. Relationship between knowledge score or functional disability index and categorical patient factors (univariate analysis, 2-sample T-test)

Variable / Categories	n	Mean FDI	T-Statistic (p-value)	Mean Knowledge Score	T-Statistic (p-value)
Education			0.37 (0.71)		0.70 (0.48)
Elementary High School	30	6.90		5.02	
College Undergraduate	27	6.37		5.19	
Employment			0.16 (0.87)		0.98 (0.33)
Employed	32	6.75		5.21	
Not Employed	25	6.52		4.97	
Disease Activity			3.35 (0.00)		
Remission / Low	24	4.08			
Moderate / High	33	8.52			
Perceived Level of Disease Knowledge					0.46 (0.65)
Very Much / Much	23			5.17	
None / Not So Much / A Little	34			5.06	
Practice to Ask Physician About Illness					0.30 (0.76)
I do not / Rarely / Sometimes	30			5.06	
Frequently / Always	27			5.14	

Table 5. Relationship between functional disability index and perceived overall health status (univariate analysis, ANOVA)

Variable / Categories	N	F-Statistic	p-value
Overall Health Status		11.52	0.00
Very Good or Good	25		
Moderate	21		
Bad/Very Bad	11		

Table 6. Relationship between knowledge score or functional disability index and continuous variables (univariate analysis, Pearson correlation)

Dependent Variable	Independent Variables	Correlation (r)	p-value
Knowledge Score	Age of Patient	-0.04	0.75
	Duration of Disease	0.14	0.30
	Number of Consultations in the Past Year	0.06	0.68
Functional Disability Index	Total Knowledge score	0.23	0.08*
	Age of Patient	-0.22	0.09*
	Duration of Illness	0.01	0.94
	Number of Consultations in the Past Year	0.07	0.62

**can be significant at the level of significance of 0.10*

Table 7. Relationship between functional disability index and patient factors (multivariate analysis)

Coefficients	Estimate	Standard Error	t-statistic	p-value
Intercept	-0.62810	4.62430	-0.136	0.890
Total Knowledge Score	0.80122	0.66665	1.202	0.240
Age of Patient	-0.01669	0.05167	-0.323	0.750
Level of Education (College)	-0.98634	1.31011	-0.753	0.460
Employment Status (Not Employed)	0.96058	1.42738	0.673	0.500
Disease Duration	0.01859	0.09058	0.205	0.840
Number of Consultations	-0.05971	0.37801	-0.158	0.880
Perceived Overall Health (Moderate)	5.30272	1.52256	3.483	0.001
Perceived Overall Health (Bad / Very Bad)	5.19160	1.83001	2.837	0.007
Disease Activity (Moderate / High)	2.14544	1.41506	1.516	0.150

a month before the consultation was insufficient and need to be further optimized.

The respondents had low awareness of situations like disease flares or adverse treatment effects when they needed to follow up earlier with their physician. This may partly be attributed to the fixed scheduling system at the clinic. Hence, they need to be reminded that unscheduled visits are possible when new troubling symptoms arise. The patients had low awareness of extra-articular disease involvement in RA. They need to be better informed that RA is a systemic disease and can affect other body organs. Knowledge about critical non-pharmacologic measures, duration of intake of anti-rheumatic drugs, consequences of untreated disease, the reason for regular consultations with their rheumatologist, and causes and risk factors of RA need to be clarified with the patient cohort. Lack of knowledge of the causes and risk factors of RA, its systemic nature, and harmful effects on the body as a whole may negatively influence the way patients view and comply with treatment. Few patients (5.3%) knew that smoking is a risk factor for RA and that smoking cessation is a non-pharmacologic intervention (8.8%). Although the prevalence of smoking among our patients with RA was shown to be relatively low at 20%, smoking cessation is a necessary intervention that our patients should know and practice.[16]

Our study also shows misconceptions that need to be addressed. First, RA causation was attributed to trauma, aging, obesity, and diet. Second, a large number considered weight loss as part of the non-pharmacologic intervention of RA. Dietary modification to achieve weight loss may help reduce pain from secondary osteoarthritis at weight-bearing joints among obese patients but may not help reduce inflammation and may aggravate the inflammation-related cachexia. These misconceptions may negatively influence the importance of complying with medications to achieve disease remission.

A study in Australia involving osteoarthritis patients found that physical limitation, restricted mobility and pain, difficulty getting to or from courses, and work commitments were the most common reasons for non-participation in self-management and patient education programs.[17] Patient education remains a challenge for healthcare providers.[18] Moreover, evaluation and assessment of our patients' literacy, language, culture, age, gender, educational background, disease duration, and perceived educational needs have to be considered before constructing a patient education program as these factors have often been identified as barriers.[19,20]

A barrier to the acquisition of patient knowledge observed among Filipinos is the patients' seeming lack of involvement in the management process. This may stem from the cultural trait of "*hiya*" or shame that may hinder patients from asking for more information about their disease. Likewise, there is fear of offending the attending physician or being misconstrued as challenging their expertise in managing the disease.[20] The barrier may also be doctor-related, for instance, a paternalistic attitude or too little time during the consultation. Some patients may be unaware of their choice or a right to participate in their care, the practice of shared decision-making between patient and physician.[21]

A systematic review of physician-patient communication at the primary care level found twenty-two physician behaviors positively associated with health outcomes. These behaviors included empathy, discussing medical data and treatment effects, inquiring and counseling for psychosocial issues, increasing time on health education, being receptive to patient questions and statements, talking at the patient's level, and increasing encounter length.[22] The skill of effective patient education should be developed and improved through training and practice.[23]

A study published in 2018 involving 16 countries (including South Korea, Japan, Hong Kong, Taiwan) and 1,805 RA patients aimed at understanding patient and physician views on treatment and management of RA. More than half of the study population felt that, in interacting with their physician or healthcare professional, information (55%) and dialogue or discussion (52%) could help them more in successfully managing RA.[24] In addition, a study in Estonia involving 1,259 patients revealed that the higher number of visits (>2) to the rheumatologist was strongly associated with more information about the disease, medication, and prognosis of working capacity (OR 1.64, 95% CI,1.18-2.29).[25] Moreover, a study in Pakistan measuring the level of awareness of disease showed a positive correlation between the time (mean 14.58 ±10.43 minutes) given by a doctor to the patient and the level of awareness ($p<0.05$).[26] These studies highlight the role of patient-physician interaction in increasing patient knowledge and improving perceived general health conditions.

The results of this study are similar to that of Salman et al. among Iraqis which showed that most patients had poor knowledge about RA.[27] Our study also revealed that age, gender, academic level, disease duration, activity, and severity had no significant association with disease knowledge. This lack of association may be due to the insufficient sample size and the considerable effect of other factors not considered in our cohort. However, other studies have shown that patients with academic degrees were no different from those who were illiterate regarding their disease knowledge.[28] Lopez-Castillo et al. reported weak or no associations between educational level and quality of life.[28]

Most patients in our study had moderate difficulty in basic grip, arising, and walking activities. Grip strength is affected by different factors at various stages of RA – the painful inflammation in small joints during early or active disease and muscle weakness and hand deformities in late RA.[29] Rydholm et al. found that although grip strength may improve in early RA during the first year of treatment, it remained significantly impaired five years after diagnosis even among patients in clinical remission and those with limited self-reported disability.[30] Nordenskiold showed that reduced grip force among women with RA was improved by patient education, assistive devices, and altered working methods. Similar to our study, they found that the most difficult-to-do activities were shopping and cleaning the kitchen floor.[31] Arising (sit-to-stand or lying-to-sit) and walking difficulty implicate a lower limb functional impairment. It can be due to joint destruction, limitations in range of motion, and muscle atrophy from the chronic disease process. In a study among Japanese patients, basic activities associated with the most difficulty were also related to the lower extremities.[32]

According to Morita et al., the factors associated with good walking ability are low disease activity, administration of methotrexate, and high knee extension strength.[33] Another study by van der Leeden et al. showed that global pain and disease activity are related to walking disability during the first eight years of RA.[34] It also revealed that the risk for walking disability increases during the disease process and with the higher age at diagnosis. Moreover, foot abnormalities are contributory to problems in walking and are associated with active joint disease and disability in RA.[35]

There was a trend for association between disease knowledge and functional disability on univariate analysis. However, this association was not sustained on multivariate analysis. The study by Mäkeläinen showed a linear correlation between disease knowledge and functional disability.[36] They proposed that patients with more disabilities are more eager to learn about their disease. This may explain why our patients with a mild functional disability had low disease knowledge.

Our study showed higher functional disability among individuals who perceive their overall health status as moderate to very bad. A study evaluating the association between self-reported functional status and quality of life in adults with and without chronic conditions found that in their population, functional status and perceived quality of life are highly associated but are distinct in many people. This association was seen in adults but not in older and younger participants. The authors concluded that poor functional status should not be equated with poor quality of life without considering internal and external patient factors.[37]

Patient education for people living with chronic diseases such as RA is paramount for patients to adapt and manage the effects of their condition and its treatments. It can improve behavior, pain, and disability.[38] Additional efforts in educating patients can enable them to acquire skills to handle their disease and its complications by themselves. Strategies to improve PxK and eventually enhance functionality should be able to 1) produce programs designed for patients, physicians, and allied health workers that take into consideration the misconceptions and misinformation this study has revealed and cultural and social factors as well; 2) maximize and improve the physician-patient interaction by training physicians as patient-educators and using small group discussion formats; and 3) increase dissemination of correct information by reinforcement through other forms of media (pamphlets, posters, websites, radio, television).

The limitations of this study include the following: 1) The setting is at a government hospital where most patients are socio-economically challenged, i.e., pharmacologic treatment is not optimized, contributing to poor disease control. 2) There are no male patients in the cohort whose treatment response, behavior, and educational needs may be different.[39] Female RA patients have expressed more interest in their educational needs than their male counterparts.[20] 3) Sample size was inadequate to establish an association between disease knowledge, functional disability, and the factors considered. 4) Other factors that may affect disease knowledge and functional disability were not considered in the study. Further research may be designed to address the gaps in this study and build up from its knowledge.

This study highlights the importance of focusing on developing educational programs that are practical and effective in our clinical setting. This is an area needing continuing research to improve the health care system in the hospital and the country.

CONCLUSION

There is insufficient disease knowledge and mild functional disability in our cohort of Filipino RA patients. There is a need for shared efforts to optimize patient education and disease control in the Arthritis Clinic of the PGH.

The aspects of disease knowledge that need to be emphasized in patient education encounters are the following: modifiable risk factors of RA, extra-articular disease involvement, when to consult a physician, long-term complications of the disease immediately, and appropriate non-pharmacologic interventions. As the only source of information for many respondents, physicians are responsible for being both creators and curators of information that patients receive during personal physician-patient interactions and from other sources like tri-media.

Statement of Authorship

All authors contributed in the conceptualization of work, acquisition and analysis of data, drafting and revising and approved the final version submitted.

Author Disclosure

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