Assessment of Malnutrition Risk Among Patients with Rheumatic Diseases in the Rheumatology Clinic of a Tertiary Training Government Hospital in the Philippines Using the Malnutrition Universal Screening Tool

Juneth Ria Limgenco-Hipe, M.D.*; Evelyn Salido, M.D.**; Angeline-Therese Magbitang, M.D.*; Allan Corpuz, M.D.*; Ana Hernandez, M.D.*; Kenneth Tee, M.D.*

Abstract

Introduction: Malnutrition is a frequently neglected problem among patients with chronic illnesses. It correlates with decreased functionality and quality of life and increased morbidity and mortality. The prevalence of malnutrition in chronic rheumatologic conditions ranges from 15-24%. There is an unfounded suspicion that malnutrition is common among Filipino patients with rheumatic diseases. The study will bridge this knowledge gap and pave the way for a more holistic approach in the care of rheumatic diseases. The researchers aim too assess the risk of malnutrition among patients of the rheumatology clinic of the Philippine General Hospital.

Methods: This is a cross-sectional study. After getting informed consent, we collected data on demographics and disease characteristics and administered the Malnutrition Universal Screening Tool (MUST). We classified patients according to malnutrition risk and managed accordingly.

Results: One hundred eighty-two patients are included (86% are female), with mean age of 45 years old (SD=16.65). The majority (54%) has less than collegiate level of education and 76% are below minimum wage earners. Twelve percent are smokers and 16% are alcohol beverage drinkers. Thirty-nine percent have systemic lupus erythematosus (SLE), 17% have rheumatoid arthritis (RA) and 16% have osteoarthritis (OA). The average duration of illness is 75 months. Ten percent are at high risk and 18% are at moderate risk of malnutrition. Six percent of SLE patients have high risk and 24% at moderate risk while 19% and 16% of patients with RA, respectively, have high and moderate risk of malnutrition. Among patients with OA, 6.9 % have high and 3.4% have moderate risk of malnutrition.

Conclusion: Using the MUST routinely identifies patients at risk of malnutrition. Twenty-eight percent of patients at the rheumatology clinics of the Philippine General Hospital have moderate to high risk of malnutrition. Identifying those at risk of malnutrition allows for timely intervention and optimal care.

Keywords: rheumatic diseases, malnutrition, malnutrition universal screening tool, philippines

Introduction

Malnutrition, a prevalent problem among developing countries, correlates with decreased functionality and quality of life, and with increased morbidity and mortality. It is defined as a state of nutrition in which a deficiency, excess or imbalance of energy, protein, and other nutrients causes measurable adverse effects on tissue/body form (body shape, size, composition), function, and clinical outcome.[1] Screening for risk of malnutrition is recommended by many national, international and specialist organizations for two reasons.[2] First, malnutrition adversely affects physical and psychological function and impairs patients' recovery from disease and injury, thereby increasing morbidity and mortality. Such detrimental effects are costly to society, increasing health care utilization. Second, malnutrition is frequently unrecognized and untreated in many health care settings, including nursing and other care homes, general practice, and hospital outpatients and inpatients.[2] In rheumatology, a third reason is the known cachexia and obesity in chronic inflammatory rheumatic diseases[3,4] and consideration of obesity as risk factors for gout and osteoarthritis.

In the Philippines, the National Nutrition Survey in 2008 showed that 11.6% of Filipino adults aged 20 and above has chronic energy deficiency (CED, BMI<18.5) and 26.6% are overweight or obese (BMI>25).[5] A follow-up survey in 2013 showed similar figures; 10% have CED and 31.1% are overweight or obese. While the proportion of CED shows a decreasing trend, the proportions of overweight/obese almost doubled from 16.6% to 31.1% over two decades (1993 to 2013).[6] With considerable prevalence of malnutrition already existing, the impact of chronic rheumatic diseases will all the more be worrisome.

Studies confirm that malnutrition is a real problem among rheumatic diseases. To manage this problem and

*Fellow-in-training, Section of Rheumatology, Department of Internal Medicine, University of Philippines-Philippine General Hospital, Manila
**Consultant, Section of Rheumatology, Department of Internal Medicine, University of Philippines-Philippine General Hospital, Manila

Corresponding author: Juneth Ria Limgenco-Hipe, M.D., University of Philippines-Philippine General Hospital, Manila, Philippines
Email: junethhipemd@gmail.com

its sequelae, it is important to identify those who are at risk and implement optimal nutritional intervention. There are various ways used to detect malnutrition. A cohort study (2007-2008) of 160 outpatients with systemic sclerosis in Pavia, Italy reported malnutrition in 24 patients (prevalence 15% (95%, CI 10–21) based on the Malnutrition Universal Screening Tool (MUST) criteria.[7] A cross- sectional study (April 2005) of 97 Japanese patients with RA reported the prevalence of malnutrition of 24.7%. The assessment was based on serum albumin level less than 3.4 g/dl.[8]

Nutritional assessment in adults and older persons begins with a thorough history and physical examination followed by anthropometric and biochemical measures (e.g albumin). Measurement of food intake may be done. Weight change over time is one of the most important aspects of the history. Acute illnesses may demand increased nutritional requirements, and the frequency and severity of such events must be noted. More specific ways of detecting malnutrition is through measurement of body composition (fat-free and fat mass indices) through dual-energy x-ray absorptiometry.[9] However, this is not readily available in many places in the Philippines and its cost may prohibit its widespread use. Nutrition screening tools that are specific, sensitive, and easy to use may be more practical and valuable in detection of those at high risk of malnutrition in resource-limited countries like the Philippines. Examples of these are the Mini-Nutritional Assessment (MNA) and the `Malnutrition Universal Screening Tool' (`MUST'). The MNA is a comprehensive tool designed and validated to provide a single, rapid, non-invasive assessment of nutritional status in elderly patients.[10-11] The MUST identifies adults who are underweight and at risk of malnutrition, or those who are obese.[12] Both tools are utilized in clinical research and practice. The latter has been evaluated in hospital wards, outpatient clinics, general practice, community, and in care homes. Using the `MUST' to categorize patients for their risk of malnutrition was found to be easy, rapid, reproducible, and consistent. It is the most widely used nutritional screening tool in the United Kingdom[13] and is also commonly used in other countries worldwide.

There is no data on the prevalence of or on the risk for malnutrition among Filipinos with chronic rheumatologic conditions. This research aims to address this knowledge gap and to suggest possible points of intervention for a more holistic approach to the management of rheumatic conditions. This study may also be a springboard for further research on the prevalence of malnutrition and its impact on rheumatic disease, quality of life and treatment.

The researchers aim to assess the risk of malnutrition among patients with chronic rheumatologic conditions who attend the rheumatology clinic of the Philippine General Hospital.

Methods

A cross-sectional study was conducted which included patients who were 19 years old and above, seen in the rheumatology clinic from June 2013 to March 2014, who signified agreement in joining the study through an informed consent document. Whereas, patients who were psychologically incapacitated were excluded from the selection. Respondents were chosen using convenience sampling. The study was conducted at the University of the Philippines-Philippine General Hospital Rheumatology Clinic.

After getting an informed consent, we collected data on demographics, rheumatologic condition and disease characteristics and administered the Malnutrition Universal Screening Tool (MUST). This involves five steps as seen in www.bapen.org.uk. Step I is obtaining nutritional measurements (height, weight, BMI, BMI score). Step II is asking about recent unplanned weight loss over three to six months and using weight loss tables to establish weight loss score. Step III is to consider the effect of acute disease. If the subject is currently affected by an acute pathological or psychological condition, and there has been no nutritional intake or likelihood of no intake for more than five days, they are likely to be at nutritional risk. Step IV is determining the overall risk score or category of malnutrition. The last step is using the management guidelines to form an appropriate care plan. We classified the patients according to malnutrition risk and managed accordingly. Descriptive statistics were expressed as means, standard deviations, and percentages.

All subjects signed a written informed consent. All patient information were coded and kept confidential. The authors had no conflicts of interest.

Results

One hundred eighty-two patients are included (86% are female), with mean age of 45 years old (SD 16.65). The majority (54%) has less than collegiate level of education and 76% are below minimum wage earners (Table I). Twelve percent are smokers and 16% are alcohol beverage drinkers. The most common rheumatologic conditions are shown in Table II. Thirty- nine percent of patients have systemic lupus erythematosus (SLE), 17% have rheumatoid arthritis (RA) and 16% have osteoarthritis (OA). The average duration of illness is 75 months.

Overall, ten percent of our patients are at high risk of malnutrition while 18% and 72% are at moderate and low risk, respectively. Combining the high and moderate risk groups, SLE and RA patients seem to have the higher risk of malnutrition compared to other rheumatic diseases. Six percent of SLE patients have high risk and 24% are at moderate risk of malnutrition. While patients with RA, 19%

Table I. Demographic profile of patients

Characteristic (n=182)	Frequency (%)
Sex	
Male	26(14.3)
Female	156(85.7)
Educational background	
Elementary	28(15.9)
High school	72(38.4)
College	75(42.4)
Employment backgound	
Never employed	20(11.2)
Previously employed	106(57.1)
Current employment	55(31.2)

Table II. Primary rheumatologic diagnosis of patients

Rheumatic disease (n=182)	Frequency (%)
Systemic lupus erythematosus	72 (39.0)
Rheumatoid arthritis	31 (17.0)
Osteoarthritis	29 (15.9)
Spondyloarthropathy	13 (7.1)
Gout	11 (6.0)
Soft Tissue Rheumatism	3 (1.7)
Others (Mixed connective tissue disease, Scleroderma, Vasculitis)	23 (12.6)

and 16% have high and moderate risk of malnutrition, respectively. (Table III)

Discussion

The importance of knowing the risk for malnutrition cannot be overemphasized. It is always better to prevent or detect problems early by screening than discover serious problems later. Both CED and obesity may occur among patients with rheumatic diseases. Poor appetite resulting from the chronic illness or as adverse effects of drugs they are receiving and unnecessary food restriction due to food myths related to arthritis or poor diet quality lead to CED.[14] In converse, lack of physical activity due to pain and increased appetite from corticosteroid use result in obesity. Using the Malnutrition Universal Screening Tool to screen for malnutrition risk, the study shows that more than a quarter of the study population has moderate to high risk of malnutrition.

These results cannot be directly compared with those from other studies because of different methodologies. However, this study shows a similar pattern of relatively high malnutrition risk among RA patients. Helliwell et. al found that 50 rheumatoid arthritis patients had all nutritional parameters

Table II. Risk of malnutrition among the 182 included patients using the MUST

Rheumatologic Condition	No. of Patients	Score = 0 Low Risk N(%)	Score = 1 Medium Risk N(%)	Score ≥ 2 High Risk N(%)
SLE	72	51 (71)	17 (24)	4 (6)
Rheumatoid arthritis	31	20 (65)	5 (16)	6 (19)
Osteoarthritis	29	26 (90)	1 (3.4)	2 (6.9)
Spondyloarthropathy	13	9 (69)	2 (15)	2 (15)
Gouty arthritis	11	10 (91)	0 (0)	1 (9)
STRs	3	2 (67)	1 (33)	0 (0)
Others	23	13 (57	7 (30)	3 (13)

significantly lower than 50 controls without differences in food intake between the two groups.[15] In South Africa, Mody et. al[16] showed undernutrition in three races of RA patients.

Although the study has produced remarkable findings, its limitations are recognized. The study included a small number of male patients. Data on co-morbid conditions were not collected. Osteoarthritis, which is the most common arthritis in humans, is underrepresented in the sample. The majority of the patients have low levels of education and belong to the lower socio-economic bracket of the society which could greatly affect not just their daily food intake but also the lack of knowledge on appropriate and recommended nutritional intake. The authors recommend taking this research further by including co-morbid conditions in data collection and studying a more diverse sample of patients with chronic rheumatic diseases. A subgroup analysis for each of the rheumatologic conditions to see how the disease itself, co-morbid conditions, or treatment can affect the patient's nutritional status will be helpful to provide more insight about this issue.

Conclusion

Twenty-eight percent of patients with rheumatologic conditions seen at the outpatient clinics of the Philippine General Hospital and included in the study were assessed to have moderate to high risk of malnutrition based on the MUST.

References

1. **Elia M.** Screening for malnutrition: A multidisciplinary responsibility. Development and Use of the Malnutrition Universal Screening Tool ('MUST') for Adults. Redditch: British Association for Parenteral Nutrition (BAPEN), 2003.
2. **Stratton, Rebecca J., Annemarie Hackston, David Longmore, Rod Dixon, Sarah Price, Mike Stroud, Claire King and Marinos Elia.** Malnutrition in Hospital Outpatients and Inpatients: Prevalence, Concurrent Validity and Ease of use of the 'Malnutrition Universal Screening Tool' ('MUST') for Adults. British Journal

of Nutrition 92, 799–808, 2004.

3. **Collins R Jr, Dunn TL, Walthaw J, Harrell P, Alarcon GS.** Malnutrition in rheumatoid arthritis. Clinical Rheumatology 6(3), 391-98, Sep 1987 (abstract).
4. **Elkan AC, Engvall IL, Cederholm T, Hafstrom I.** Rheumatoid cachexia, central obesity and malnutrition in patients with low-active rheumatoid arthritis: feasibility of anthropometry, Mini Nutritional Assessment and body composition techniques. European J Nutrition 48 (5): 315-22, Aug 2009 (abstract).
5. **7th National Nutrition Survey-FNRI-DOST. 2011.** http://www.fnri.dost.gov.ph/index.php/19-nutrition-statistic/108-7th-national-nutrition-survey.
6. **8th National Nutrition Survey- FNRI-DOST. 2013.** http://www.fnri.dost.gov.ph/index.php/nutrition-statistic/19-nutrition-statistic/118-8th-national-nutrition-survey
7. **Caporali, Roberto, Caccialanza, Ricardo, Bonino, Claudia, et al.** Disease-related malnutrition in outpatients with systemic sclerosis. Clinical Nutrition 31(5): 666–671, October 2012.
8. **Wataru Fukuda, Takahito Yamazaki,et al.** Malnutrition and disease progression in patients with Rheumatoid arthritis. Modern Rheuma 15 (2):104-107, April 2005.
9. **Elkan AC, Engvall IL, Tengstrand B, Cederholm T, Hafstrom I.** Malnutrition in women with rheumatoid arthritis is not revealed by clinical anthropometrical measurements or nutritional evaluation tools. European J Clin Nutrition (62), 1239-47, 2008.
10. **Guigoz Y, Vellas J, Garry P.** Mini Nutritional Assessment: A practical Assessment tool for grading the nutritional state of elderly patients. Facts Res Gerontol Suppl: 15-59, 1994.
11. **Murphy MC, Brooks CN, New SA, Lumbers ML.** The use of the Mini Nutritional Assessment tool in elderly orthopaedic patients. Eur J Clin Nutr 54:555-562, 2000.
12. **Malnutrition Universal Screening Tool.** www.bapen.org.uk.
13. **Russell CA, Elia M.** Nutrition screening survey in the UK and Republic of Ireland in 2010. A report by BAPEN, 2011.
14. **Berube LT, Kiely M, Yazici Y.** Diet quality of individuals with rheumatoid arthritis using the Healthy Eating Index (HEI)-2010. Nutrition and Health 23(1), 17-24, 2017. https://doi.org/10.1177/0260106016688223
15. **Helliwell M, Coombes EJ, Moody BJ, Batstone GF, Robertson JC.** Nutritional status in patients with rheumatoid arthritis. Ann Rheum Dis 43: 386-90, 1984.
16. **Mody GM, Brown GM, Meyers OL, Reinach SG.** Nutritional assessment in rheumatoid arthritis. S Afr Med J 76 : 255-7, 1989.