ORIGINAL ARTICLE

Self-reported symptoms of depression, anxiety and stress among patients with Rheumatoid Arthritis in a Malaysian rheumatology centre - prevalence and correlates

Ruhaila Abdul Rahim, MRCP, Chong Hwee Cheng, MRCP

Rheumatology Unit, Department of Medicine, Hospital Melaka, Malaysia.

ABSTRACT

Objective: To determine the prevalence, correlates and independent predictors of self-reported depression, anxiety and stress in Rheumatoid arthritis (RA) patients in Hospital Melaka.

Methods: This was a cross-sectional survey using convenient sampling of 192 RA patients who attended the Rheumatology Clinic outpatient appointment, Hospital Melaka from June 2013 to December 2013. Depression, Anxiety and Stress Scale (DASS21) questionnaire was used to evaluate symptoms of depression, anxiety and stress. RA disease activity was assessed using the DAS28-ESR formula. Functional status was assessed via the Health Assessment Questionnaire Disability Index (HAQ-DI).

Results: Out of 189 completed questionnaires, 46%(n=86) patients reported psychological distress symptoms, and 25%(n=48) experienced more than one negative emotional states. The prevalence of depression, anxiety and stress among our patients were 23.3%(n=44), 42.3%(n=80) and 20.1%(n=38) respectively. There were significant positive correlations ($p<0.05$) between these psychological symptoms with disease activity, number of tender joints, general health, pain and HAQ score. Age was inversely correlated with depression, anxiety and stress. Higher number of swollen joints correlated positively with depression but not with anxiety and stress. HAQ was the only independent predictor for depression (Odds Ratio [OR]=2.07; 95%CI: 1.19 to 3.61) and anxiety (OR=1.81; 95%CI: 1.1 to 3.0) whilst pain was found to be independent predictor for stress (OR=1.04; 95%CI: 1.0 to 1.1).

Conclusion: The incidence of depression and anxiety in our Malaysian sample of RA patient was comparable to that observed in Caucasian populations. Functional status was an independent predictor of depression and anxiety, whereas pain was an independent predictor of stress.

KEY WORDS:
Depression, Anxiety, Stress, Rheumatoid Arthritis, Prevalence, DASS

INTRODUCTION

Rheumatoid Arthritis (RA) is associated with an increased risk of psychological distress including anxiety and depression.[1-3] In a recent meta-analysis of depression in RA patients, Matcham et al., found that prevalence of depression ranged from 14.8% to 48%, twice higher than the general population.[4] Similarly, Chow et al. reported that 17.2% of Malaysian patients with RA have depression.[5]

RA patients with co-existing depression have worse health outcomes. Depression increases mortality in RA[1,6] and is an independent risk factor for cardiovascular disease and suicidal ideation after controlling for disease activity, duration of illness, disability and pain.[7] RA patients with depression utilise more health services[1] and their adherence to medication regimes is worse than that of non-depressed RA patients.

Evidence of whether or not disease activity affects depression is inconsistent.[5,8] On the other hand, functional disability has consistently been shown to be a strong predictor of depression in patients with RA.[5,7,8] Margaretten et al., found that Asian RA patients reported less depression than Hispanics, Whites, and African Americans.8 Chow and Katz separately reported that ethnicity did not contribute to depression amongst their patients.[1,5]

Malaysia is a South East Asian nation comprising people of various ethnicities with Malay, Chinese and Indian being the main ethnic groups. Languages mostly spoken are Malay, English, Mandarin and Tamil. Melaka is one of the 14 states in Malaysia. Hospital Melaka is a public hospital and is the sole hospital offering secondary Rheumatology services to the state of Melaka and the border towns in neighbouring states. There are fewer studies on anxiety compared to research on depression in RA patients, although several studies have previously reported that anxiety is the more prevalent condition of the two.[9] Anxiety and stress are related, but not identical concepts. Anxiety is an emotion of apprehension or fear and may occur as part of a stress response. Stress may also evoke other emotions such as anger, frustration and depression. Although depression, anxiety and stress are closely linked, they are considered as distinct conditions.[4] Lisitsyna et al., reported that in 52% of patients, stress events preceded the onset of RA.[10] It has also been suggested that people with RA may be hypersensitive to certain stressors and/or generate a bigger stress response.[11]

Patients afflicted with RA live with chronic pain and constant fatigue. Many have physical disabilities. Some lose their jobs

This article was accepted:
Corresponding Author: Ruhaila Abdul Rahim
Email: ruhailaabdulrahim@gmail.com

and consequently their financial independence. A few will eventually lose their sense of self and have suicidal ideations as they begin to feel useless and despair over their disease. Stress may aggravate RA and lead to more frequent flares. Therefore, it is crucial to identify earlier on RA patients who suffer psychological distress as they may require further medical attention.

The objectives of this study were to determine the prevalence of self-reported depression, anxiety and stress among RA patients attending the Rheumatology Clinic in Hospital Melaka and to investigate potential correlates of these symptoms of psychological distress, namely demographic variables, disease activity and functional status. This is the first study to investigate the prevalence of self-reported stress, anxiety symptoms and depression in a Malaysian RA sample.

METHODS

Data was collected using a cross-sectional survey of a convenience sample of 192 RA patients who attended the Rheumatology outpatient clinic in Hospital Melaka between June 2013 and December 2013. Patients were included if they fulfilled the American College of Rheumatology (ACR) diagnostic criteria for RA,[12] were able to read or understand (through a translator) all relevant documents and gave informed consent for participation in the study. They completed the questionnaires while waiting to be seen by the attending clinician.

The demographic questionnaires requested information on the patient's gender, age, race, duration of illness, marital status, level of education, household income and occupation. Other questions included medical comorbidities, patient's knowledge about RA and their medication, presence of social support and financial problems. As this is a self-administered questionnaire, simple words were used for response options. Knowledge about illness and medication is based on patient's perception, with response options categorised as 'none', 'some' or 'a lot'. Social support referred to the patient knowing someone with the same illness or otherwise (yes or no), without limiting to RA support groups.

Depression, anxiety and stress symptoms were measured using the short self-administered version of the Depression, Anxiety and Stress Scale (DASS), the DASS21.[15] The DASS21 is a set of three self-report scales, which contains 7-items per scales, designed to measure the negative emotional states of depression, anxiety and stress. Subjects are asked to use 4-point severity/frequency scales to rate the extent to which they have experienced each state "over the past week". The DASS-Depression focuses on reports of low mood, motivation, and self-esteem, DASS-anxiety on physiological arousal, perceived panic, and fear, and DASS-stress on tension and irritability. Scores for Depression, Anxiety and Stress are calculated by summing the scores for the relevant items.[15] English, Malay and Mandarin language versions of this scale have been validated[14,16] and it was chosen because it was reliable, easy to administer and is useful in both research and clinical practice. Its internal consistency, convergent validity and divergent validity are similar across racial groups,[14] this was an important consideration given our multiracial sample. Functional status was determined using Health Assessment Questionnaire (HAQ). The HAQ is one of the most widely used comprehensive, validated, patient-oriented outcome assessment instruments.[17]

Disease activity was indexed as the modified disease activity score (DAS). These variables included the 28-joint swollen and tender joint counts, visual analogue scale (VAS) as a measurement of patients' general health score and the erythrocyte sedimentation rate (ESR) as the acute phase reactant, from which the composite disease activity scores DAS28-ESR were calculated. It has been extensively validated and used in clinical trials.[18] Self-assessed pain using the VAS (0-100mm) was used in analyses of relationships between severity of pain and stress, anxiety and depression.

Sample size calculation

The necessary sample size was calculated using Epi Info Version 7.0.8.3.[19] At the time of this study, 457 RA patients were attending our clinic. To calculate the prevalence of depression (reported to be about 17% in the Malaysian population[5] in an earlier study) in our RA patients with 5% precision, we needed a sample size of 174. We increased the sample size to 192 to allow for 10% of incomplete datasets.

ETHICAL ISSUES

Ethical approval for the study was obtained from the Medical Research Ethics Committee, Ministry of Health Malaysia (KKM/NIHSEC/ 800-2/2/2/P13-315).

STATISTICAL ANALYSIS

Data was analysed using the SPSS 18.0 software system. The correlations between stress, anxiety and depression, and age, duration of illness, pain score, tender joints, swollen joints, functional status and disease activity were calculated using Pearson's correlation test. A p-value of <0.05 was taken to indicate significant correlation. The strength of the correlations was defined as follows, very high correlation: $r \geq 0.90$; high correlation: $r=0.70$-0.89; moderate correlation: $r=0.50$-0.69; low correlation: $r=0.26$-0.49 and little or no correlation: $r \leq 0.25$.[20] The associations between psychological distress and demographic variables were analysed by cross-tabulation and chi-square tests. Descriptive statistics were mean with 1 standard deviation (SD) for normally distributed data and median with interquartile range (IQR) for skewed data. Multiple logistic regression was used to reveal independent predictors of stress, anxiety and depression.

RESULTS

A total of 192 RA patients consented to participate and were given the questionnaires; from these 189 completed questionnaires were analysed. Majority of the patients were female (88.4%, n=167), Malay (63%, n=119), and married (69.3%, n=131). Mean age was 51.98 years (SD=11.22). Median duration of illness was 5 (IQR=9) years. Less than half the patients had at least secondary education (45.5%, n=86) and 6.3%(n=12) had received no formal education. More than half of the patients were unemployed (57.7%,

Table I: Demographic and clinical characteristics of patients with RA attending Rheumatology clinic (n=189)

Characteristics	Mean (SD)	Median (IQR)	Frequency (%)
Age	51.98(11.22)	-	-
Gender			
Male	-	-	22 (11.6)
Female	-	-	167 (88.4)
Ethnicity			
Malay	-	-	119 (63.0)
Chinese	-	-	49 (25.9)
Indian	-	-	21 (11.1)
Marital status			
Single	-	-	19 (10.1)
Married	-	-	131 (69.3)
Widow/widowed	-	-	22 (11.6)
Divorced	-	-	17 (9.0)
Education level			
None	-	-	12 (6.3)
Primary	-	-	55 (29.1)
Secondary	-	-	86 (45.5)
Tertiary	-	-	36 (19.0)
Household Incomea			
<RM1000	-	-	77(42.1)
RM1000-2999	-	-	58(31.7)
RM3000-7999	-	-	44(24.0)
>RM8000	-	-	4 (2.2)
Occupation[b]			
None	-	-	30(16.0)
Housewife	-	-	79(42.2)
Non professional	-	-	49(26.2)
Professional	-	-	29(15.5)
Presence of social support[b]			
Yes	-	-	82(43.9)
No	-	-	105(56.1)
Presence of comorbidities			
Yes	-	-	121 (64.0)
Hypertension	-	-	66 (34.9)
Diabetes Mellitus	-	-	28(14.8)
Cardiovascular disease	-	-	7 (3.7)
Asthma	-	-	10 (5.3)
Others	-	-	10 (5.3)
No	-	-	68(36.0)
Knowledge of illness			
none	-	-	18 (9.5)
some	-	-	114 (60.3)
a lot	-	-	57 (30.2)
Knowledge of medication[b]			
none	-	-	10 (5.3)
some	-	-	108 (57.8)
a lot	-	-	69 (36.9)
Duration of illness (years)[c]	-	5 (9)	-
Disease activity	4.00(1.36)	-	-
Duration of illness (years)[c]	-	5 (9)	-
HAQ score	1.00(0.77)	-	-
Tender joints count	-	1(4)	-
Swollen joints count	-	1(4)	-
Pain score	38.74(25.73)	-	-
General health score	38.33(24.16)	-	-

[a]6 missing values [b]2 missing values [c]right skewness

Table II: Correlation between the disease activity, number of tender and swollen joints, duration of illness, age, functional status and pain score with DASS(21) scale

Variables	DASS(21) SCALE		
	Stress (n=189)	Anxiety (n=189)	Depression (n=189)
Age	-0.235[a]	-0.169[a]	-0.169[a]
	(0.001)[b]	(0.020)[b]	(0.028)[b]
Duration of illness	-0.011[a]	0.039[a]	-0.053[a]
	(0.884)[b]	(0.596)[b]	(0.467)[b]
Pain score	0.408[a]	0.341[a]	0.404a
	(<0.001)[b]	(<0.001)[b]	(<0.001)[b]
Tender joints	0.255[a]	0.197[a]	0.261[a]
	(<0.001)[b]	(0.007)[b]	(<0.001)[b]
Swollen joints	0.148a	0.060[a]	0.164[a]
	(0.043)[b]	(0.412)[b]	(0.024)[b]
HAQ score	0.323[a]	0.399[a]	0.373[a]
	(<0.001)[b]	(<0.001)[b]	(<0.001)[b]
DAS28-ESR score (disease activity)	0.269[a]	0.233[a]	0.282[a]
	(<0.001)[b]	(0.001)[b]	(<0.001)[b]

a Pearson's correlation coefficient (r);very high correlation: r ≥0.90, high 0.70-0.89, moderate correlation: r=0.50-0.69, low correlation: r=0.26-0.49, and little or no correlation: r≤0.25. b = p-value

Table III: Demographic characteristics in association with psychological distress in RA patients

Parameters	Stress			Anxiety			Depression		
	normal n=151	stress n =38	p*	normal n=109	anxiety n= 80	p*	normal n=145	depression n= 44	p*
Gender, n (%)			0.78			0.752			0.122
Male	17(11)	5 (13)		12 (11)	10(12)		14(10)	8(18)	
Female	134(89)	33(87)		97(89)	70(88)		131(90)	36(82)	
Ethnicity n (%)			0.58			0.613			0.23
Malay	96(64)	23(60)		70(64)	49(61)		94(65)	25(57)	
Chinese	40(26)	9(24)		29(27)	20(25)		38(26)	11(25)	
Indian	15(10)	6(16)		10(9)	11(14)		13(9)	8(18)	
Education, n (%)			0.039			0.118			0.435
none	10(7)	2 (5)		7(6)	5(6)		10(7)	2(5)	
primary	50(33)	5(13)		37(34)	18(23)		44(30)	11(25)	
secondary	67(44)	19(50)		50(46)	36(45)		67(46)	19(43)	
tertiary	24(16)	12(32)		15(14)	21(26)		24(17)	12(27)	
Marital Status, n (%)			0.357			0.17			0.612
single	13(9)	6(16)		9(8)	10(13)		14(10)	5(11)	
married	104(69)	27(71)		72(66)	59(74)		98(68)	33(75)	
divorced	14(9)	3 (8)		11(10)	6(8)		14(10)	3(7)	
widow	20(13)	2 (5)		17(16)	5(6)		19(13)	3(7)	
Income,[a] n (%)			0.388			0.244			0.341
<RM1000	67(46)	10(28)		47(43)	30(39)		62(44)	15(36)	
>RM1000	80(54)	26(72)		60 (57)	46(61)		79(56)	27(64)	
Occupation,[b] n (%)			0.368			0.234			0.869
none	24(16)	6(16)		19(18)	11(14)		22(15)	8(18)	
housewife	63(42)	16(42)		40(37)	39(49)		62(43)	17(39)	
non professional	42(28)	7(18)		33(31)	16(20)		36(25)	13(30)	
professional	20(13)	9(24)		15(14)	14(17)		23(16)	6(14)	
Social Support,[b] n (%)			0.074			0.591			0.617
yes	71(47)	11(31)		46(42)	36(46)		65(45)	17(41)	
no	80(53)	25(69)		63(58)	42(54)		80(55)	25(59)	
Cormobidities, n (%)			0.616			0.541			0.437
present	98(65)	23(60)		72(66)	49(61)		95(66)	26(59)	
absent	53(35)	15(40)		37(34)	31(39)		50(34)	18(41)	
knowledge of medication, n (%)			0.233			0.025			0.186
none	10(7)	0 (0)		9(8)	1(1)		10(7)	0(0)	
some	84(56)	24(65)		55(51)	53(67)		83(58)	25(58)	
a lot	56(37)	13(35)		44(41)	25(32)		51(35)	18(42)	
knowledge of illness,[b] n (%)			0.595			0.047			0.369
none	15(10)	3(8)		15(14)	3(4)		14(10)	4(9)	
some	93(62)	21(55)		60(55)	54(67)		91(63)	23(52)	
a lot	43(28)	14(37)		34(31)	23(29)		40(28)	17(39)	
Duration of illness	7.53	8.07	0.677	7.64	7.64	0.995	7.71	7.40	0.795
(Mean, +/-SD)	(6.89)	(7.62)		(7.28)	(6.72)		(6.86)	(7.64)	
Age (Mean, +/-SD)	53.06	47.71	0.008	53.75	49.58	0.011	52.74	49.48	0.091
	(11.43)	(9.26)		(11.09)	(11.00)		(11.51)	(9.88)	

*p-value <0.05, SD=standard deviation , [a]6 missing values [b]2 missing values

Table IV: Clinical characteristics association with psychological distress in RA patients

Parameters	Stress			Anxiety			Depression		
	normal n=151	stress n =38	p*	normal n=109	anxiety n= 80	p*	normal n= 145	depression n= 44	p*
HAQ score (Mean, +/-SD)	0.91 (0.76)	1.34 (0.72)	0.002	0.82 (0.75)	1.24 (0.72)	<0.001	0.86 (0.722)	1.43 (0.760)	<0.001
Pain score (Mean, +/-SD)	33.95 (25.16)	57.76 (18.21)	<0.001	31.54 (24.79)	48.55 (23.79)	<0.001	34.06 (25.47)	54.16 (20.12)	<0.001
General health (Mean, +/-SD)	34.37 (23.86)	54.05 (18.43)	<0.001	31.02 (22.84)	48.29 (23.38)	<0.001	33.90 (23.12)	52.91 (21.87)	<0.001
Tender joints count (Mean, +/-SD)	2.61 (4.46)	5.16 (5.85)	0.016	2.35 (3.51)	4.18 (6.12)	0.018	2.35 (3.97)	5.66 (6.48)	<0.001
Swollen joints count (Mean, +/-SD)	2.07 (2.72)	3.26 (3.22)	0.041	2.12 (2.54)	3.78 (1.28)	0.298	1.95 (2.47)	3.50 (3.66)	0.001
Disease activity (Mean, +/-SD)	3.87 (1.33)	4.53 (1.35)	0.07	3.78 (1.28)	4.31 (1.41)	0.008	3.81 (1.27)	4.66 (1.44)	<0.001

*p- value <0.05, SD=standard deviation

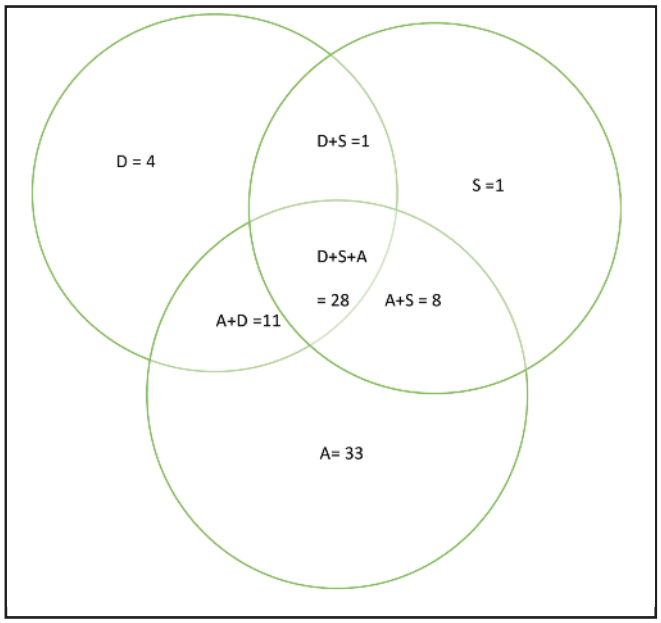

Fig. 1: Number of RA patients with Depression, Anxiety and Stress symptoms.
D=Depression, A=Anxiety, S=Stress

n=109) and nearly half of them had a low monthly income of RM<1000 (approximately USD300) (42.1%, n=77). Most of our patients had medical co-morbidities (64%, n=121), with hypertension having the highest prevalence (34.9%, n=65) followed by diabetes mellitus (14.5%, n=27). More than half reported they did not know any other person with RA or belong to any support group (56%, n=105), and perceived they had some knowledge about their illness (60.3%, n=114) and medication (57.8%, n=108).

Mean disease activity score was 4.00 (SD=1.36), mean HAQ score was 1.00 (SD=0.77), mean VAS pain score was 38.74 (SD=25.73) and mean general health score was 38.33 (SD=24.16). Median numbers for tender and swollen joints were both 1 (IQR=4). The demographic and clinical characteristics of the patients are summarised in Table I.

Out of 189 completed questionnaires, 46% (n=86) patients reported psychological distress symptoms, and 25% (n=48) experienced more than one negative emotional states. The prevalence of depression, anxiety and stress in our patients were 23.3%(n=44), 42.3%(n=80) and 20.1%(n=38) respectively. Anxiety was more prevalent than depression and stress. The prevalence of patients having 2 psychological distress symptoms were 10.5% (n=20) and 14.8 % (n=28) of them were having all the symptoms. (Figure 1)

There were significant positive correlations (p<0.05) between the measures of psychological distress and disease activity, number of tender joints, general health, pain, and HAQ score. There was a negative correlation between age and psychological distress. Duration of illness was not correlated with stress, anxiety or depression. Table II summarises the correlations between demographic and variables of psychological distress. In univariate analysis age, level of education, knowledge of illness and medications revealed significant association (p<0.05) with anxiety and stress (Table III). Number of swollen joints did not correlate with anxiety (p=0.298). Neither was there a significant positive association between disease activity and stress (p=0.07). These aside, all the other clinical variables were significantly correlated with psychological distress (p<0.05) (Table IV).

Multiple logistic regression revealed that functional status (HAQ score) was a predictor of anxiety (OR=1.81; 95%CI: 1.1 to 3.0) and depression (OR=2.07; 95%CI: 1.19 to 3.61) whilst pain was found to be independent predictor for stress (OR=1.04; 95%CI: 1.0 to 1.1). Other demographic and clinical characteristics were not significant predictors of depression, anxiety or stress.

DISCUSSION

This is the first study to investigate the prevalence of self-reported stress, anxiety symptoms and depression separately in a Malaysian RA sample. We found that the prevalence of depression and anxiety in our RA patients was comparable to that of Caucasian populations reported in Western studies,[4] and to a local study by Chow et al.[5], contradicting the conclusion by Margaretten et al., who observed that Asian patients reported less depression.[8] The prevalence of depression in our RA patients was twice higher than the general population[21] and diabetic patients[22] in Malaysia. Diabetes mellitus is similar to RA in that both are chronic diseases with multiple organ complications and potential serious long-term sequelae. Anxiety was more prevalent than depression, consistent with findings in other studies[23,24]. In our sample, the prevalence of stress mirrors that of depression and was also twice as high as that of Malaysian diabetic patients.[22]

Although this was a sampling of RA patients from a single centre, it is representative of the racial makeup of the Malaysian population and is similar to the demographic profile of RA patients in Malaysia as reported in the Malaysian National Inflammatory Arthritis Registry (NIAR),[25] apart from the Indian patient subgroup. In this study, RA patients from the Indian race comprise 11% of our sample as opposed to 30% in NIAR. Indian RA patients may have been over-represented in the NIAR due to sampling bias, as during the preparation of the NIAR report, several states did not have Rheumatology service and the areas serviced by the then participating hospitals were more heavily populated by the Indian race.[25] The demographic profiles were similar to NIAR in that, most of the patients were female, had co-morbidities with hypertension as the most prevalent, and belonged to the low socio-economic group.

Disease activity, functional status, number of tender joints, general health and pain score were positively correlated with depression, anxiety and stress. The number of swollen joints was associated with depression. Age was negatively correlated with these symptoms of psychological distress. This was consistent with the results in a meta-analysis by Matcham et al. Similar to findings reported by Matcham[4] and VanDyke,[9] duration of disease was not associated with depression nor anxiety in our study.

As in previous studies, functional status was noted to be an important predictor of depression and anxiety, whilst pain was a predictor of stress. Zyrianova et al., found that perceived social support was a predictor of depression and anxiety but we did not replicate this finding.[25] in our sample, other demographic and clinical variables although initially revealed significant association with stress, anxiety and depression, were not independent predictors of psychological distress. These findings could be explained by the small sample size. We suggest in future to have a larger scale of study to look at stress, anxiety and depression separately in RA patients.

In conclusion, the prevalence of depression and anxiety in our Malaysian sample was comparable to that reported in studies involving Caucasian patients. Psychosocial distress as a response to chronic illnesses is similar between Caucasian and Asian patients. Anxiety was the most prevalent psychological symptom. Symptoms of anxiety should be treated more promptly as they are a precursor of depression. These findings suggest that routine screening for psychosocial distress among RA patients in Malaysia is important and enable us to enhance patient care. DASS21 having been validated in different languages, is reliable and easy to administer and is a useful tool in a busy outpatient clinic setting.

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