

REFERRAL WAIT TIME AND ILLNESS SEVERITY OF PATIENTS WITH NON-COMMUNICABLE DISEASES REFERRED TO SPECIALIST CLINICS OF A TERTIARY HEALTHCARE CENTRE IN SOUTH-WEST NIGERIA.

O.O. Kolade¹, A.M. Obimakinde^{1,2}, A.E. Irabor¹

1. Department of Family Medicine, University College Hospital, Ibadan, Nigeria.

2. Family Medicine Unit, Department of Community Medicine, College of Medicine, University of Ibadan.

Correspondence:

Dr. O.O. Kolade

Department of Family Medicine,
University College Hospital,
Ibadan.

E-mail: onaopemipooluwatayo@gmail.com

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ABSTRACT

Background: Wait times for healthcare specialists are inevitable due to demand-supply imbalances. However, tailoring wait times to individual patient needs based on illness severity is crucial for equitable care. The relationship between illness severity and referral wait times therefore has significant consequences for patient outcomes and the overall efficiency of the healthcare system.

Objective: This study assessed the relationship between illness severity and referral wait times among patients with Non-Communicable Diseases (NCDs) referred to selected specialist clinics in a tertiary healthcare centre in South-West Nigeria.

Methods: A cross-sectional study of 310 adult patients with NCDs referred from the General Outpatient (GOP) clinic of the Department of Family Medicine to the Medical, Surgical and Psychiatry specialty outpatient clinics was conducted. Illness severity was assessed using the Duke Severity of Illness (DUSOI)/WONCA Checklist, and wait times were obtained through follow-up phone calls. Data was analysed using the Statistical Package for Social Sciences (SPSS) Version 28.

Results: The median wait time was 27 days, and about half of the patients had intermediate illness severity levels. The relationship between illness severity and wait times was not statistically significant.

Conclusion: Referral wait times were not significantly associated with patients' illness severities. This highlights the need for a critical review of referral and triage practices with a multi-pronged approach to improve wait time experiences for patients.

Keywords: Referral, Wait time, Illness severity

INTRODUCTION

Wait times are an important index of the operational functionality of any healthcare system.¹ Several possible waits may arise for a patient while seeking healthcare.¹⁻⁵ Patients sometimes wait for hours to days to see primary care physicians who are the gatekeepers of the healthcare system, known as the primary care wait time.^{2,4} After a consultation with a primary care physician, a patient may be referred to see specialists and have to additionally wait for days to weeks, first to get their appointment dates and then to see the specialist.^{2,4} This is known as referral or specialist wait time.^{2,6} Patients may also wait for diagnostic testing, procedures such as surgeries or other forms of treatment, known as the wait times for diagnostic testing and elective treatment respectively.⁴

Wait times in the healthcare system are topical issues in some parts of the world.^{2,4,7,8} The Organisation for

Economic Co-operation and Development (OECD)-member countries such as Canada, Australia, Finland, the United Kingdom and the United States have led the way in making efforts at improving wait times, including referral wait times over the years, implementing policies such as setting benchmarks for maximum wait times.^{4,8,9} Whilst not there yet, these efforts have yielded some positive results and shown a reduction in wait times.² There is limited information on referral wait times in developing parts of the world, like Nigeria.⁴ A few Nigerian studies have looked at emergency room and general outpatient clinic wait times (the number of minutes to hours it takes for patients to be seen at the emergency room or general outpatient clinic)^{10,11} but not much attention has been paid to referral or specialist wait times. Patients' satisfaction reduces with prolonged wait times to see specialists and such delays could be potentially harmful

resulting in worry, stress, and anxiety for both the patients and their relations, worsening prognosis and increased mortality for the patients.^{12–16}

Referral wait times are important regardless of the pathology a patient has but are particularly likely to be longer with Non-Communicable Diseases (NCDs) which are by nature, insidious and are likely to be viewed as cold cases.¹⁷ NCDs are chronic diseases such as cardiovascular diseases, cancer, and diabetes mellitus which account for 70% of all deaths globally with about 75% of these deaths occurring in Low and Middle-Income Countries (LMICs).^{18–20} Patients with these chronic diseases often require specialist referrals from primary care clinics at some point in the course of their management.^{19,21} Due to different clinical needs based on illness severity, access to outpatient specialist care on a first come, first served basis may not necessarily be the best approach to maximise patient outcomes.⁷ Illness severity should therefore be an all-important factor to consider in prioritizing a patient's consultation at specialist clinics.²² There is a knowledge gap about referral wait times and factors that affect it such as the patient's illness severity.²³ This study explored the association between wait times for specialist consultations and illness severities of patients with Non-Communicable Diseases referred from the Family Medicine Outpatient Clinic of a tertiary health centre in Nigeria.

MATERIALS AND METHODS

This was a cross-sectional study conducted from June to September 2022 at the General Out-Patient (GOP) Clinic of the Department of Family Medicine of a tertiary health centre in South-West Nigeria. The GOP Clinic serves as an entry point for most patients with undifferentiated diseases who present to the hospital, irrespective of their age and gender. Patients who require referrals are handed hard copy referral letters which they take to the specialist clinics and appointment dates are assigned by a nurse at the clinic reception or duty doctor (usually a resident doctor in training) at the specialist clinic.

Sample size calculation

The sample size of 310 was arrived at, using the Leslie Kish sample size formula with a prevalence of wait times above the mean of 50% and a 10% attrition rate to adjust for participants' drop-out.

Sampling

A review of statistical records of patients referred to the various specialist clinics from the GOP clinic in the preceding year, showed that most (82%) of all NCD referrals were to the Surgery, Medical and Psychiatry (PSY) clinics monthly. Hence referrals to

these three clinics were used in this study. Of the 82%, Surgery, Medical and Psychiatry clinics comprised 32.4%, 25.3% and 24.3% respectively with proportionate sample allocation done to recruit 122, 96 and 92 participants for the three clinics respectively. Adult patients (18 years and above) diagnosed with NCDs requiring referrals to the aforementioned clinics were included in the study. However, acutely ill patients who required emergency care and pregnant patients were excluded from the study as these were either routed via the emergency department or antenatal clinic and not directly to any of the specialist clinics. All consenting patients who met the eligibility criteria were recruited over four months until the sampling proportion for each clinic was attained.

Data collection

Socio-demographic data of the respondent, including the age at last birthday (in years), gender, highest educational qualification, marital status, religion, ethnic group, occupation and average monthly income were obtained. The respondents were also asked if they had an acquaintance working within the hospital who could influence their appointment dates.

Illness severity, defined as the extent of organ system derangement or physiologic decompensation evidenced by (symptoms and complications), limitation of activities and risk of death in a patient was assessed using the Duke Severity of Illness/WONCA checklist.²⁴ Scores ranging from 0 - 4 were assigned for each of the four parameters: Symptoms, Complications, Prognosis and Treatability. A total raw score (0 – 16) was then calculated as the Severity score and a score of 1 – 4 was classified as low, 5 – 8 as intermediate, 9 – 12 as high and 13 – 16 as maximum illness severities. The International Classification of Primary Care (ICPC-2), a component of the DUSOI/WONCA checklist was used to classify the patients' diagnoses. The patients were called within 72 hours of referral to inquire about the appointment dates given at the specialist clinics. Referral Wait Time was calculated as the time interval from the presentation of a referral letter at the specialist clinic to the first appointment date given to see the specialist (measured in days).

Data management

The outcome variable was referral wait times. The independent variables were the illness severity of the patients and the sociodemographic characteristics. Statistical analysis was done using the Statistical Package for Social Sciences (SPSS Version 28 for Windows, SPSS Incorporated, Chicago, USA). Mann-Whitney U and Kruskal-Wallis were used to test associations between sociodemographic data and wait times.

Spearman rank was used to test the correlation between illness severity and wait times.

Approval of the Ethical Review Committee of the University of Ibadan/University College Hospital Ibadan Institutional Review Board (UI/UCH IRB) was obtained, and permission was sought from the Head of the Department of Family Medicine before conducting the study. The autonomy of participants was ensured by obtaining informed consent from each study participant recruited in accordance with ethical principles guiding physicians in medical research.

RESULTS

The mean age of the respondents was 43.5 ± 17.4 years and there was an almost equal male-to-female ratio (Table 1). The majority (78.4%) of the respondents did not have relations or acquaintances working within the hospital, who could influence their appointment dates. More males were referred to the Psychiatry and MOP clinics when compared with females while more females were referred to the SOP clinic (Table 2).

About half of the patients, $n = 149$ (48.0%), had an intermediate level of illness severity (Fig. 1) followed

Table 1: The socio-demographic characteristics of the respondents (N=310)

Socio-Demographic Characteristic	Frequency	Percentage(%)
Age Group		
18-25 years	57	18.40
26-44 years	111	35.80
45-59 years	72	23.20
≥ 60 years	70	22.60
Mean	43.5 ± 17.4 years	
Sex		
Male	156	50.30
Female	154	49.70
Highest Educational Level		
No formal education	22	7.10
Primary	46	14.84
Secondary	94	30.32
Tertiary	148	47.74
Marital Status		
Single (Never married)	106	34.20
Married	175	56.50
Separated	6	1.90
Divorced	5	1.60
Widowed	18	5.80
Religion		
Christianity	203	65.50
Islam	107	34.50
Ethnic Group		
Hausa	3	0.97
Igbo	21	6.77
Yoruba	274	88.39
Others	12	3.87
Working Status		
Employed	218	70.30
Unemployed	92	29.70
Average Monthly Income		
No income	47	15.20
< Minimum wage (< 30,000)	94	30.30
Minimum wage and above ($\geq 30,000$)	169	54.50
Median (IQR)	N30,000 (N10,000 – N60,000)	
Range	N0 – N3,500,000	

Table 2: Gender distribution of participants disaggregated by specialist clinics

		PSY	MOP	SOP	Total
Sex	Male	52	63	41	156
	Female	40	59	55	154
Total		90	122	96	310

by 124 (40.0%) who had a high level of illness severity while 30 (9.7%) of respondents were rated as having low illness severity and 7 (2.3%) had the maximum level of illness severity. There was no significant

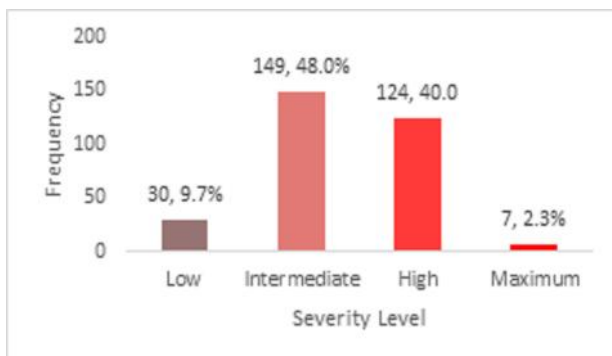


Figure 1: Respondents' illness severity based on the DUSOI/WONCA checklist.

difference in illness severities between male and female participants (p-value 0.360). Illness severity significantly increased with age of patients (p-value 0.003) (Table 3). Conversely, illness severity significantly decreased with higher educational levels (p-value 0.006). There was a significant difference in illness severities of patients referred to the different clinics (p-value 0.010) – Table 4. The illness severity of patients referred to the Medical Outpatients clinic (mean rank = 167.39) was higher than for the other clinics (Psychiatry mean rank = 163.38, Surgical Outpatient mean rank = 132.84). The median referral wait time was 27 days, with an interquartile range of 60 days. The minimum wait time was 0 day while the maximum was 150 days. Male genital system and urology cases had the highest median wait times of 90 days each, followed by diagnoses related to the circulatory system at 63 days and psychological cases at 60 days (Figure 2). The diagnoses related to the female genital system had the least median wait time of 5 days. The psychiatry clinic had the longest median wait time of 60 days with a minimum of 0 day and a maximum of 76 days. The MOP had a median wait time of 23.5 days with a minimum of 0 day, and a maximum of 150 days and SOP had the

Table 3: Patients' illness severities by gender, age, and educational level

Variables	Levels	Mean Rank	p-value
Sex	Female	150.86	0.360
	Male	160.08	
Age Group	18-25 years	120.29	0.003*
	26-44 years	155.52	
	45-59 years	161.22	
	≥ 60 years	178.26	
	No formal education	199.50	
Educational level	Primary	177.92	0.006*
	Secondary	157.65	
	Tertiary	140.63	

*Statistically significant

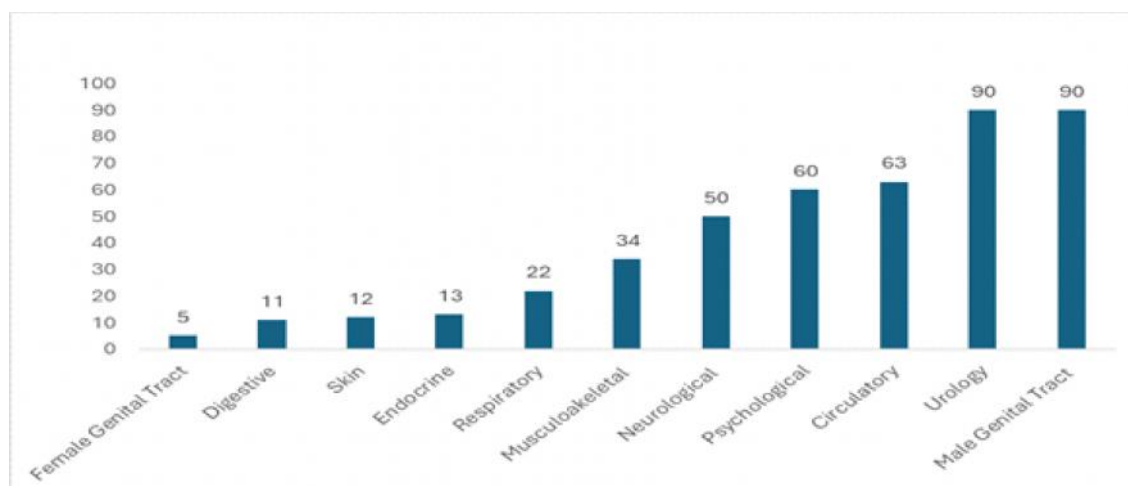


Figure 2: Median wait time of the participants disaggregated by diagnosis classification (ICPC2).

Table 4: Patients' illness severities by specialty clinics

Variables	Levels	Mean Rank	p-value
Clinics	SOP	132.84	0.010*
	Psychiatry	163.38	
	MOP	167.39	

least median wait time of 12 days with a minimum of 0 day and a maximum of 101 days.

The gender of the patients had a significant influence on their referral wait time ($p\text{-value} = 0.021 < 0.05$). Males were more likely to have longer referral wait times (Table 5). Religion, age, marital status, ethnicity, level of education, working status and average monthly income did not have any significant impact on the referral wait times.

Table 5: Respondents' socio-demographic characteristics and referral wait times

Socio-Demographic Characteristic		Mean Rank (Referral wait times)	p-value
Sex	Female	143.70	0.021*
	Male	167.14	
Religion	Christianity	153.41	0.571
	Islam	159.47	
Working Status	Employed	151.55	0.232
	Unemployed	164.66	
Age Group	18-25 years	137.16	0.181
	26-44 years	163.49	
	45-59 years	147.29	
	≥ 60 years	166.21	
Highest Educational Level	No formal education	189.25	0.225
	Primary	140.99	
	Secondary	153.85	
	Tertiary	156.04	
Marital Status	Single	159.69	0.448
	Married	149.53	
	Separated	161.25	
	Divorced	214.40	
	Widowed	170.56	
Ethnic Group	Hausa	195.83	0.875
	Igbo	160.07	
	Yoruba	154.65	
	Others	156.96	
Average monthly income categorized	No income	173.34	0.317
	< 30,000	154.69	
	≥ 30,000	150.99	
Acquaintance that could help with the referral process	Yes	111.06	<0.001*
	No	167.75	

*Statistically significant

Table 6: Analysis of respondents' diagnosis classification and referral wait time

		Mean Rank	p-value
Diagnosis Classification	Female Genital System	56.21	<0.001*
	Digestive	99.62	
	Skin	100.71	
	Endocrine, metabolic, nutritional	108.07	
	Respiratory	130.92	
	Musculoskeletal	149.30	
	Psychological	171.84	
	Neurological	178.87	
	Circulatory	193.33	
	Urology	218.25	
	Male Genital System	234.43	

*Statistically significant

Having an acquaintance working within the hospital had significant influence on first appointment wait times, with such respondents having shorter referral wait times ($p\text{-value} < 0.001 < 0.05$) (Table 5).

Patients' ICPC-2 diagnosis classification ($p\text{-value} < 0.001 < 0.05$) had a significant influence on referral wait times (Table 6). Patients with male genital system problems were most likely to get longer wait times, followed by urology and circulatory system diseases whilst patients diagnosed with respiratory, skin, and female genital system diseases were more likely to get shorter wait times.

The observed correlation between illness severity and wait times was positive though statistically insignificant ($r = 0.098$, $p\text{-value} 0.086 > 0.05$) even after controlling for the number of consultants in the receiving speciality and cadre of staff that assessed the referral letters ($r = 0.076$, $p\text{-value} 0.184 > 0.05$).

DISCUSSION

The median appointment wait times at the specialist clinics was 27 days. Over 80% of the study population had intermediate and high levels of illness severity. Referral wait times increased with increasing illness severity though this relationship was not statistically significant.

The overwhelming majority of the study population had intermediate to high levels of illness severity leaving very few on the extremes of low and maximum illness severities. This was not surprising because patients requiring referrals are likely to be significantly indisposed to require specialist care but not to the extent and severity requiring care via the emergency route. Moreover, it is documented in existing literature that most presentations in primary care fall within the mild (low) to high severity levels.²⁴ Therefore, it is logical that the mild cases would be managed within primary care and those requiring referrals to specialist clinics would fall within the intermediate to high severity categories as seen in this study.

Patients referred to the medical clinics had higher illness severity compared to the other clinics in the study whilst those referred to the surgical clinics had the least illness severity levels. This may be because surgical disorders, being more anatomical, may tend to manifest more rapidly and therefore present earlier (even when the illness severity is milder) given the consequent structural, functional and/or cosmetic disruptions they cause. Contrarily, medical conditions are by nature more pathophysiological problems for which the body tends to compensate, sometimes for a long time before significant symptoms show up. Therefore, patients with

medical conditions have a greater likelihood of being more severely ill by the time they present.

The median wait time in this study is much less compared to the median wait time of 180 days in Australia published in 2019, the Chilean wait time of 68 days reported in 2019 and 42 days in a study in Canada in 2022.^{6,12,25} Plausibly, there is a paradoxically higher demand for the healthcare system in developed parts of the world than currently experienced in Nigeria and other developing countries plagued by multi-level barriers to accessing quality healthcare. African countries also have various alternate healthcare access practices such as trado-herbal and the uncontrolled use of over-the-counter medications. Other barriers that exist in our context, include poor health-seeking behaviour and lack of resources on the part of the patient, poor healthcare financing and infrastructure for advanced diagnostics and treatment on the part of the healthcare system.²⁶

The minimum wait time in this study was 0 day, which meant that the patient was seen on the day of referral while the maximum was 150 days. The male genital system cases such as benign prostate hyperplasia and urology cases such as urolithiasis, had the highest median wait times of about 13 weeks each, similar to a reported Canadian Urology wait times of 14 weeks.²⁷ All (100.0%) of female genital system cases fell within the shorter wait time and had the least median wait time of 5 days. This is not surprising because they consisted mainly of breast lesions which could potentially be malignant. Moreover, these female patients were referred to the general surgery unit of the hospital which has three subdivisions with each running clinics once a week. This affords three days a week in which a general surgery consult can be honoured. This is in sharp contrast to Canadian general surgery referrals with a wait time of 8.4 weeks to see the specialists.²⁷

Patients referred to the psychiatry clinic in this study had a median wait time of 60 days comparable to 67 days in a study done across five states in the United States by Sun et al.²⁸ This also correlates with the 8.4 weeks that obtained for elective psychiatry referrals across some provinces in Canada, though they had a shorter wait time of 2.4 weeks for urgent referrals.²⁷ This might suggest a global shortage of mental health specialists.

Medical cases had a median wait time of 23.5 days which was lower than a Canadian study that showed a median of 39 to 76 days.⁵ Surgical cases had a median of 12 days, much lower than for surgical specialists in the Canadian study which had a median of 33 to 66

days.⁵ These are in keeping with a much higher demand for specialist health services in Canada.

The specialist clinics to which the patients were referred, had a statistically significant influence on their first appointment wait times. This might suggest a disparity in the shortage of doctors across specialties resulting in varying backlogs of patients.²⁹

Impact of Sociodemographic Characteristics on First Appointment Wait Times.

The age of the patients did not show a significant association with wait times. This is in contrast to the findings of Naimer et al. in a Canadian study which revealed that the old adults had longer wait times than the young adult and adult age groups.⁶ Their findings, however, were unexpected given that one would have anticipated shorter wait times for the old adults because they tend to have higher illness severities as reported earlier in this study and other previous studies.^{30,31} The comparability of both studies is however limited by the fact that Naimer et al. did not factor in the illness severity of the patients.

The gender of the patients had a significant influence on their first appointment wait time, in contrast to the Canadian study by Naimer et al. in which there was no difference in wait times by sex.⁶ Males in this study were more likely to have longer first appointment wait times to see specialists than was observed with women. The role of gender was unanticipated given that there was no statistically significant difference in illness severity between males and females. It is however worthy of note that more females than males were referred to the surgical and medical clinics which generally had less wait times compared to the psychiatry clinic (Table 2). This could be a possible confounder, hence a potential explanation for the observed gender-linked wait time disparity.

Educational status and average monthly income were used as measures of socioeconomic status in this study. Though not statistically significant, patients with no formal education were more likely to have longer first-appointment wait times than patients with any level of education. A possible explanation for this phenomenon could be hinged upon the fact that the more educated patients were better able to negotiate with the attending healthcare personnel and as such may have been able to convey the need for shorter wait time. This may be of concern especially given that patients with lower levels of education were found to have greater illness severities (Table 3). Also, those with no income at all had the longest wait times followed by those paid less than the current Nigerian

minimum wage while those paid above the minimum wage had the least wait times. These are similar to the findings of a Norwegian study by Monstad *et al.* and a Spanish study by Garcia-Corchero *et al.* in which those who were more educated and those who earned higher incomes had significantly shorter wait times than their counterparts with lower levels of education and income respectively.^{32,33}

The Relationship between the Illness Severity and Wait Times

The observed correlation between illness severity and wait times was positive. Though not statistically significant, this meant that as the illness severity increased, wait time also increased. This seemed illogical as the reverse is expected to be the case, as seen in the Canadian study by Moir et al. in which patients with greater illness severity, classified as 'urgent' had shorter wait times.²⁷ Possible explanations for this in our severally-challenged health system could include a combination of rising demand for specialist care, limited resources, inefficient triage, and inequities which can result in paradoxically longer waits for those who need care most. Furthermore, patients who are more ill usually require more supportive services that are only available with much difficulty, as such, they are "screened out" of a system not built to support them. Having an acquaintance working within the hospital was a possible confounder which was evaluated and found to have a statistically significant influence on specialist appointment wait times. Patients who had no relations or acquaintances in the hospital were more likely to have a longer wait time compared to those who did, and this indeed begs the equity question. This seemingly reflects the Nigerian factor of "man-know-man" and should be discouraged in health care systems.^{34,35}

The number of consultants in the receiving specialty also had no significant moderating effect on the association between illness severity and wait time of the patients. This was surprising because the number of consultants in a given unit typically determines the number of new patients they take on per clinic day since the consultants are usually the ones who see the new patients.

The findings of this study call for a critical review of current practices to improve the wait time experiences of patients. From a policy standpoint, it might help to have a specialist wait time benchmark within which all referrals must be seen. This may be classified into routine or urgent referrals. If the diary system is being used in scheduling patients, that is, filling up daily slots as referrals come in, one or two slots may be reserved

as an allowance to cater for urgent cases that might show up.

The study was conducted in a single tertiary teaching hospital which limits generalization of the results to other teaching hospitals/specialist services in Nigeria. Also, wait times were calculated based on the appointment dates given rather than via a longitudinal study which would have shown the actual wait times the patients experienced. The latter would have allowed a survival analysis which would have shown the actual effect of wait times on patient outcomes.

Regardless of the limitations, this study is one of the few on illness severity and wait times in Nigeria. This study has contributed to the sparse literature available on the subject matter and has opened up other areas which could be explored by further research on illness severity, referral system and wait times in Family Practice.

CONCLUSION

The overall findings reveal that the relationships between the variables of interest are not linear but may involve a complex set of interactions coming to play. The implication, therefore, is that solving the 'wait-time problem' must be via a multi-pronged approach, as all contributory factors need to be improved upon. Better strategies and system changes need to be explored and instituted in a collaborative manner to ensure timely care for patients.

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