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Abstract:

Purpose: This study aimed to examine the association between socio-demographic characteristics and patient valuation of health system responsiveness domains among patients with diabetes mellitus and hypertension attending chronic care clinics in tier three hospitals in Kenya. Understanding these relationships is important for improving non-clinical aspects of healthcare quality and patient-centered care.

Methodology: A cross-sectional survey was conducted among 308 patients attending diabetic and hypertensive clinics in Kimilili, Uasin Gishu, and Gatundu tier three hospitals. Data were collected using a structured questionnaire. Data were analyzed using SPSS version 27, applying chi-square tests at a 95% confidence level to assess associations between socio-demographic variables and responsiveness domain rankings.

Findings: Respondents had a mean age of 56.6 years and a median monthly income of KES 10,000. Dignity and promptness emerged as the most highly valued responsiveness domains, while social support and amenities were least valued. Significant associations were found between responsiveness domain rankings and facility location (p=0.01) as well as marital status (p=0.032). Other socio-demographic factors, showed no significant association.

Unique Contribution to Theory, Practice and Policy: The study highlights the contextual nature of health system responsiveness, emphasizing the influence of facility location and marital status. Findings inform healthcare managers and policymakers on targeted interventions to enhance patient experience in chronic care settings.

***Keywords*:** *Health system responsiveness, socio-demographic characteristics, chronic conditions, Diabetes Mellitus, Hypertension*.

JEL CODES: I10, I12, I18

1.0 Introduction

This article evaluates the impact of patient sociodemographic characteristics on the prioritization of responsiveness domains. Responsiveness, a fundamental objective within health systems (Ibeneme et al., 2020) involves fulfilling legitimate non-health-improving customer expectations(Achstetter et al., 2022).The World Health Organization initially proposed a responsiveness framework that included domains related to respect for persons such as dignity, autonomy, clarity of communication, and confidentiality and client orientation domains, including promptness, quality amenities, choice, and access to social support networks(Adhikari et al., 2024). Later, additional domains were suggested, such as effective care and attention (Forouzan et al., 2016), as well as trust and coordination (Rottger et al., 2014).The level of responsiveness is influenced by both client and provider characteristics(Mirzoev & Kane, 2017).Other studies have identified factors affecting responsiveness, including the type of hospital (Adesanya et al., 2012)the working conditions of healthcare providers(Topp & Chipukuma, 2016) and a country's income level(Geldsetzer et al., 2018).This study focuses on outpatient diabetes and hypertension clinics in tier three/primary hospitals in Kenya.

Diabetes mellitus, a condition marked by elevated blood sugar levels, affects approximately 537 million people worldwide, accounting for 10.5% of adults aged 20–79. This number is projected to rise to 783 million by 2045, primarily due to urbanization and increasingly sedentary lifestyles(Kumar et al., 2024). In Kenya, diabetes prevalence varies, partly due to inconsistent data, with estimates ranging from 2.4% to 3.5% of the population(Otieno et al., 2021).A study by Mohamed et al., (2018) reported a prevalence of 2.4% in urban areas, 3.4% among the wealthiest quintile, 1.9% in rural areas, and 1.6% among the poorest quintile. More recent findings indicate that type 2 diabetes affects 4.2% of the general population in Kenya, with prevalence rates of 2.2–2.7% in rural areas and 10.7–12.2% in urban areas(Kiarie et al., 2023). Hypertension, defined by elevated blood pressure in the blood vessels, affects 22% of adults worldwide, with Africa experiencing the highest prevalence at 27%. Key risk factors include high-fat diets, physical inactivity, alcohol consumption, tobacco use, and stress. Hypertension is closely linked to diabetes, often leading to complications that necessitate integrated care. In Kenya, hypertension prevalence varies across studies, with reported rates of 22%(Mogaka et al., 2022) and 29%(Pengpid & Peltzer, 2020).

This study focused on health system responsiveness, vital for effective healthcare, a human rights concern, and pivotal for health outcomes and building trust with clients(Semyonov-Tal, 2024). The study sought to examine how sociodemographic characteristics influence the mean rankings of health system responsiveness domains—reflecting patients' valuations of these domains—among individuals with diabetes and hypertension in three primary hospitals in Kenya: Kimilili, Uasin Gishu, and Gatundu(Luoma et al., 2010). Responsiveness valuations reflect how persons value or perceive the usefulness of responsiveness and the relative importance placed upon the domains(Valentine et al., 2003). For this premise to hold, it is assumed that responsiveness domains are meaningful to clients. Valuations are shaped by factors such as culture, socioeconomic status, and societal context. Generally, poorer, minority, or marginalized groups tend to have lower expectations of dignified treatment or empowerment to demand responsiveness, making them less likely to challenge violations(Lawrence & Kinn, 2012; Ratcliffe et al., 2020).

Studies indicate that health system responsiveness is highly valued, although the importance of specific domains varies. In Iran, over 90% of respondents rated all domains as important, with basic amenities, dignity, and prompt attention ranking highest, while autonomy was rated slightly lower (Malekzadeh et al., 2021). European studies show a preference for collaborative decision-making and the ability to choose medical providers (Coulter & Jenkinson, 2005). Inpatient studies also report strong performance in domains such as confidentiality, despite their lower perceived importance (Mohammadi & Kamali, 2014). In South Africa, top-ranked domains included basic amenities, confidentiality, and dignity (Peltzer & Phaswana-Mafuya, 2012).In Kenya, interventions focusing on provider–client engagement, emotional support, and health literacy on accountability mechanisms have improved responsive care (Njuguna, 2020; Warren et al., 2023).

2.0 Materials and Methods

This descriptive cross-sectional study aimed to assess socio-demographic influences on rankings of responsiveness domains among patients with diabetes mellitus and hypertension. Data were collected from September to December 2020 from three primary hospitals; that is, Gatundu in Kiambu County (urban), Uasin Gishu in Uasin Gishu County (peri-urban), and Kimilili in Bungoma County (rural) (Macharia et al., 2021).

Sample Size

The sampling frame was 853 patients enrolled in care for diabetes mellitus, hypertension or both. Sample size was determined using the Cochrane formula (Taherdoost, 2017);

$n=z^2pq/d^2$

Where;

n= is sample size

z =is the standard normal deviate at the required confidence level

p= is the proportion in the target population estimated to have characteristics being measured, 50% was chosen for maximum variability.

q=1-p

d=the level of statistical significance set, being 5%, confidence level of 95% as commonly applied in social surveys.

$n=1.96^{2*}0.5*0.5/0.5^2=384.16$

The sample sizes for the finite population

nf=n/ {(1+n)/N} =384/ {1+(384/853)} =266.

This was a baseline survey for a follow up study, hence, to provide for non-retention, 10 % was added, and a further 10% was also added for non-response, as suggested by Fetene et al., (2022) bringing the total sample size to 323.

Table 1: *sample size distributions*

Hospital	Population	Calculated New sample size	Adjusted sample size	Duly filled
Kimilili	167	52	81	80
Uasin Gishu	256	80	108	98
Gatundu	430	134	134	130
Total	**853**	**266**	**323**	**308**

Sampling and sampling procedures
Every adult patient enrolled for care for diabetes, hypertension or both in the selected hospitals comprised the study population. Systematic random sampling technique with a sampling interval of 3 was used to obtain the study sample of 323 respondents.

Data Collection
Data, gathered through a structured questionnaire, encompassed socio-demographic factors including facility location, age, gender, medical condition, religion, marital status, insurance status, income source and level, and education. Responsiveness domains were ranked in regard to what the clients regarded as the most important

Validity and Reliability
Validity ensures the accuracy of construct measurement (Coleman, 2022). Data collection tools underwent thorough review, pretesting, and revisions to enhance validity. Randomizing the sample reduced selection bias. Reliability indicates consistency of measurement tool (Amirrudin et al., 2021). Tools were uniform, and they were reviewed by the research team for completeness. Cronbach's coefficient alpha was used to assess reliability.

Ethical approval
Approval was obtained from the Research Ethics Committees of Kenya Methodist University (Approval No: KeMU/SERC/HSM/4/2020) and Moi University (Approval No: 0003643). A research license was obtained from NACOSTI (License No: NACOSTI/P/20/5650). Permissions were obtained from hospital managements teams, while written informed consent was obtained from all participants, who were informed of their right to withdraw from the study at any time.

3.0 Results and Discussion
A total of 308 questionnaires were duly filled and returned, yielding a response rate of 95.35%, which was satisfactory as guided by Sileyew(2019).

Descriptive Results for Sociodemographic Variables
Respondents' ages ranged from 19 to 95 years (mean: 56.6), and they were further categorized into four groups based on developmental stages. Monthly income estimates ranged from Ksh.1000 to Ksh.100000, with a median of Ksh.10000 (70USD). Using median split, earnings were categorized

as 'Low' and 'High' as applied in other studies (Herr et al., 2022). Results are summarized in Table 2 below. Most respondents, (130 (42.2%) were from Gatundu Hospital; female 213(69.2%), aged between 40-59 years; 159(51.6%), had only hypertension; 156(50.7%) and were protestants; 159(51.6). Majority,214 (69.5%) were married, educated up to primary school level;110 (35.7%); and engaged in small scale farming,130 (42.2%). Most respondents were low-income earners and without any medical insurance,172(55.8%).

Table 2: *Socio-demographic Characteristics of Respondents*

Variable	Subsets	Frequency	Percent
Facility Location	Rural (Kimilili)	80	26.0
	Peri-urban (Uasin Gishu)	98	31.8
	Urban (Gatundu)	130	42.2
Gender	Female	213	69.2
	Male	95	30.8
Age	< 40 Years	28	9.1
	40–59 Years	159	51.6
	60–79 Years	96	31.2
	≥ 80 Years	25	8.1
Medical Condition	Diabetes Mellitus (DM)	95	30.8
	Hypertension (HTN)	156	50.7
	Diabetes and Hypertension	57	18.5
Religion	Catholic	114	37.0
	Protestant	159	51.6
	Muslim	25	8.1
	Traditionalists	10	3.2
Marital Status	Single	46	14.9
	Married	214	69.5
	Divorced	10	3.2
	Widowed	22	7.1
	Others	16	5.2
Highest Educational Level	No Formal Education	29	9.4
	Primary School	110	35.7
	Secondary	108	35.1
	Tertiary	61	19.8
Main Source of Income	Business	79	25.6
	Farmer (Large Scale)	45	14.6
	Farmer (Small Scale)	130	42.2
	Formal Employment	40	13.0
	Casual Labour	9	2.9
	Others	5	1.6
Income Level	Low	217	70.5
	High	91	29.5
Insurance Enrolment	Yes	136	44.2
	No	172	55.8

Ranking of Responsiveness Domains

Respondents were asked to name the domain they consider the most important domain for them. The frequencies per domain were summed up to come up with the ranking, thus the one with the highest frequency of rankings as the most important would be the most valued domain. The results are summarized in Figure 1

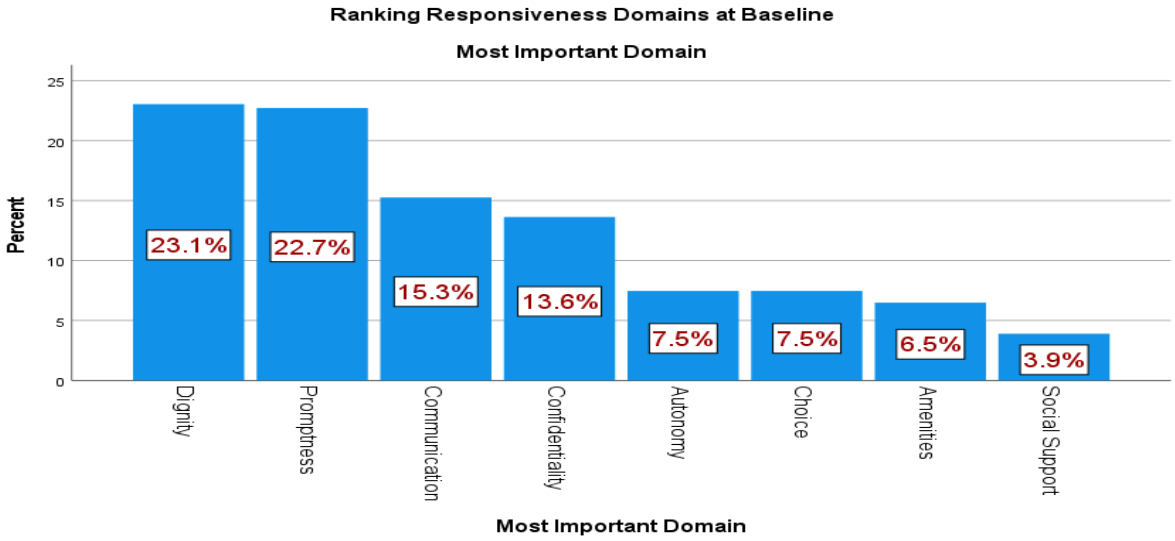

Figure 1: Ranking of domains in regard to relative importance

Overall, this study found that dignity (23.1%) and promptness (22.7%) were the most valued responsiveness domains, followed by communication, while social support (3.9%) was the least valued. These findings partly align with international evidence emphasizing respect and timeliness as key aspects of responsive care. Similar results were reported by Srivastava et al. (2015), where clients preferred prompt services to longer consultation times, and by studies in Iran that identified dignity and prompt attention among the most important domains (Malekzadeh et al., 2021). However, the findings contrast with Iranian and European studies that also valued domains such as quality of basic amenities, autonomy, and freedom of choice (Coulter & Jenkinson, 2005). This variation suggests that while respect and efficiency are universally important, patients in the Kenyan context may place less emphasis on structural and choice-related factors, reflecting differing expectations and experiences within health system performance. Regarding facility location, dignity and promptness were the most preferred domains overall, though variations existed across the three hospitals. Promptness ranked highest in Gatundu, while dignity was most valued in Kimilili and Uasin Gishu. Although social support was least preferred in aggregate, Kimilili differed slightly, ranking it above amenities. Overall, except for promptness, respondents across all facilities tended to value the “respect for person” domains; dignity, communication, confidentiality, and autonomy. The comparative rankings are presented in Figure 2.

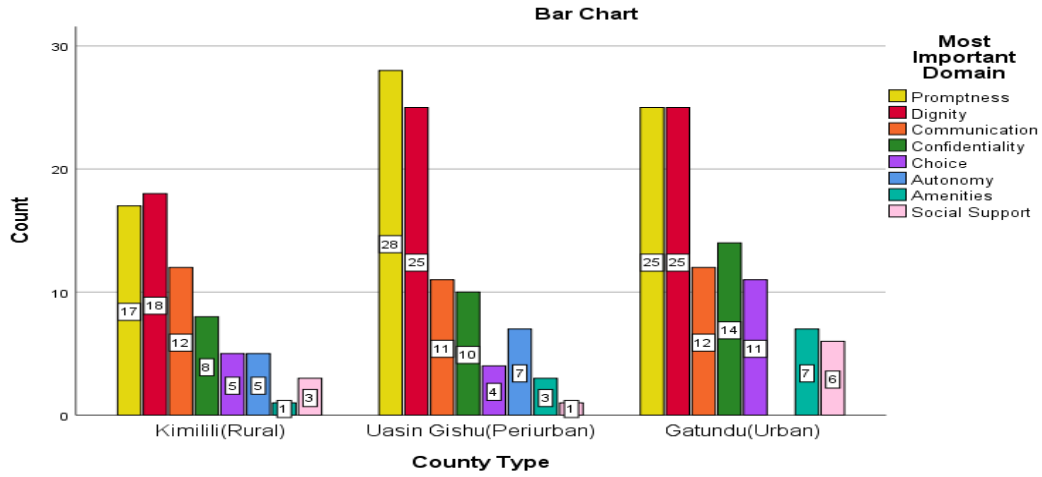

Figure 2: Rankings across the facilities

In this study, dignity emerged as the most valued domain in Kimilili, whereas promptness was most prioritized in Uasin Gishu and Gatundu hospitals, with social support and amenities consistently ranking lowest across all facilities. The high valuation of dignity aligns with previous findings indicating that respect and humane treatment are universally prioritized in healthcare (Ahmadi Kashkoli et al., 2017; Mohammadi & Kamali, 2014), while the emphasis on prompt attention corresponds with studies highlighting timely care as a key determinant of patient satisfaction (Ughasoro et al., 2017). However, these results contrast with studies in Nigeria, where communication (55.4%) was rated as the most important domain, followed by dignity (54%) and choice (42%) (Mohammed et al., 2013), and with Iranian findings, where autonomy was the most valued domain (Malekzadeh et al., 2021). Similarly, the low valuation of amenities in this study differs from findings in Nigeria, where basic amenities were reported as major drivers of patient satisfaction (Mohammed et al., 2013).

These variations underscore that patient priorities are shaped by healthcare system performance, cultural expectations, and contextual realities, highlighting the multidimensional nature of responsiveness, which is influenced by both service quality and client characteristics. The low ranking of social support and amenities may reflect limited patient expectations or the relative invisibility and inconsistent provision of these services, rather than a lack of importance. Patients appear to prioritize aspects that directly affect their immediate experience, such as dignity and prompt attention, over environmental comforts or supplementary support services. Nevertheless, these underappreciated domains present opportunities for targeted improvement to promote a more holistic, patient-centered approach.

The observed differences across facilities also suggest the need for context-specific strategies: interventions in Kimilili should focus on sustaining and enhancing dignity, whereas Uasin Gishu and Gatundu hospitals should prioritize improving prompt attention. Globally and regionally, evidence consistently indicates that patients value respect and timely care, reflecting tangible,

immediate aspects of service delivery (Malekzadeh et al., 2021; Peltzer & Phaswana-Mafuya, 2012). Overall, the study highlights that while dignity and promptness are universally prioritized, social support and amenities are less valued but remain important for achieving comprehensive responsiveness in healthcare systems.

Association between Socio-demographic Variables and Responsiveness

Respondents were asked to identify the most important domain, and frequencies were calculated for each. Since sociodemographic variables were categorical, the chi-square (χ^2) test was used to assess whether these characteristics significantly influenced the ranking of responsiveness domains. The results of this analysis are presented in Table 3.

Table 3: *Inferential analysis between sociodemographic variables and ranking of responsiveness domains*

Variable	d.f	$\chi 2$	P value
Facility	14	28.858	0.011
Gender	7	7.320	0.396
Age	21	22.780	0.356
Education	21	21.660	0.419
Occupation	35	22.054	0.957
Insurance	7	5.402	0.611
Marital status	28	43.413	0.032
Religion	21	23.944	0.296
Income	7	7.150	0.413

The chi-square analysis shows that facility ($\chi^2 = 28.858$, $p = 0.011$) and marital status ($\chi^2 = 43.413$, $p = 0.032$) were significantly associated with participants' rankings of health system responsiveness domains, indicating that both the location of care and a patient's marital status meaningfully influence how they value aspects such as dignity, promptness, and communication. In contrast, all other variables—including gender, age, education, occupation, insurance status, religion, and income—had p-values greater than 0.05, suggesting they do not significantly affect patients' prioritization of responsiveness domains in this context. Overall, these findings highlight that patient perceptions of responsiveness may be shaped more by the facility attended and social context than by other sociodemographic characteristics.

From a policy perspective, these findings highlight the need for context-specific strategies to improve responsiveness. Health facilities should tailor interventions to address the specific priorities of their patient populations, recognizing that variations in facility and social context can shape patient expectations. Additionally, understanding the influence of marital status may help policymakers design programs that consider family or household dynamics in service delivery, ensuring equitable and patient-centered care across diverse populations.

In Kenya, interventions focused on provider–client engagement, emotional support, and patient awareness of accountability mechanisms have improved responsiveness, suggesting that underappreciated domains can be enhanced through deliberate strategies(Njuguna, 2020; Warren et al., 2023).Overall, these findings underscore the need to maintain dignity and prompt attention as central priorities while gradually strengthening domains to meet comprehensive patient needs.

4.0 Conclusions

The study concludes that healthcare responsiveness can be strengthened by recognizing the significant influence of sociodemographic factors, particularly facility location and marital status. These factors shape how patients perceive and value different aspects of care. The consistent ranking of dignity as the most valued domain reflects the importance of respectful and compassionate treatment in patient experiences. By tailoring responsiveness strategies to local contexts and diverse patient needs, health systems can promote more equitable, person-centered care and achieve better overall health outcomes.

5.0 Recommendations

It is recommended that healthcare managers and policymakers prioritize targeted interventions that give particular attention to the significant factors identified including facility location and marital status; as these strongly influence patients' perceptions of care responsiveness. Equally, other factors such client factors should be considered to ensure a comprehensive approach. Given that dignity consistently emerged as the most valued domain, followed closely by communication and prompt attention, interventions should emphasize fostering respectful treatment, effective provider–patient interaction, and timely care delivery. Balanced attention to these domains, alongside other domains, will help create a more respectful, efficient, and person-centered health system. Continuous assessment of patient experiences across different contexts will ensure that services remain equitable, responsive, and aligned with diverse patient needs, ultimately enhancing both satisfaction and health outcomes.

Study Contribution

This study sheds light on how socio-demographic factors affect responsiveness in chronic illness patients at Kenyan primary hospitals. It underscores the need to customize healthcare responses based on individual characteristics, given the varying contexts.

Conflict of interest

The authors state that they have no conflict of interest.

Author contribution

All authors contributed to study conceptualization and design. Kibiriti Hillary conducted data collection, analysis, interpretation, manuscript drafting, and revision. Wanja Tenambergen and Mapesa Job supervised the study and reviewed the manuscript. All authors reviewed and approved the final manuscript.

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