



Human Resource Forecasting as a Predictor of Perceived Health Service Delivery in Selected Districts of Central Uganda

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Abstract: Human resource forecasting is a critical component of workforce planning because it enables healthcare organizations to anticipate staffing requirements and sustain effective service delivery. Despite ongoing workforce planning initiatives, public health facilities in Uganda continue to experience staffing shortages, workforce imbalances, and delayed replacement of exiting personnel, which may undermine service delivery outcomes. This study examined the relationship between human resource forecasting and perceived health service delivery in selected districts of Central Uganda. A convergent mixed-methods design was employed. Data were collected from 150 health workers through questionnaires and from 33 key informants through interviews, focus group discussions, and document review. Quantitative data were analysed using descriptive statistics, Pearson correlation, and simple linear regression, while qualitative data were analysed thematically. Findings revealed a statistically significant positive relationship between human resource forecasting and perceived health service delivery ($r = .386, p < .001$). Regression analysis further indicated that human resource forecasting significantly predicted perceived health service delivery ($B = .648, \beta = .386, t = 5.091, p < .001$), explaining 14.9% of the variance in service delivery outcomes. Qualitative findings showed that forecasting enhanced service delivery through strategic anticipation of staffing needs, workforce specialisation, continuity of care, equitable workload distribution, and professional development opportunities. The study concludes that human resource forecasting significantly influences perceived health service delivery. It recommends institutionalising workforce forecasting within district health planning systems, strengthening workforce information systems, and conducting regular staffing forecasts to improve healthcare service delivery.

Keywords: Human Resource Forecasting, Health Service Delivery, Workforce Planning, Public Health Facilities, Central Uganda.

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1. Introduction

Globally, health systems increasingly recognize human resources as strategic assets that determine organisational

effectiveness and health service delivery outcomes. Human resource forecasting has become an important component of workforce planning because it enables organisations to anticipate future staffing requirements and align workforce

capacity with changing service demands. According to the World Health Organisation (2016), effective workforce planning strengthens health system responsiveness, continuity of care, and service accessibility by ensuring the availability of qualified personnel. Forecasting further supports evidence-based recruitment, deployment, and workforce development decisions necessary for maintaining organisational performance in dynamic healthcare environments. Consequently, many healthcare organisations increasingly integrate forecasting into strategic workforce planning to improve service quality and operational efficiency.

Human resource forecasting involves estimating future workforce requirements based on anticipated service demand, workforce attrition, retirement patterns, technological changes, and organisational objectives. Effective forecasting enables healthcare organisations to identify future staffing gaps, prepare succession strategies, and implement timely recruitment interventions before workforce shortages affect service delivery. Studies indicate that organisations with effective forecasting mechanisms are better positioned to maintain workforce stability, respond to operational challenges, and achieve improved organisational outcomes (Wright & McMahan, 2011; Boxall & Purcell, 2016). Conversely, inadequate forecasting contributes to staffing shortages, excessive workloads, delayed recruitment, and disruptions in healthcare service provision. The ability to accurately anticipate future workforce needs therefore remains a critical determinant of organisational effectiveness and healthcare performance.

Across Sub-Saharan Africa, healthcare systems continue to experience workforce shortages, skills mismatches, and inequitable distribution of qualified personnel. These workforce challenges constrain healthcare organisations from delivering accessible, reliable, and quality services to rapidly growing populations (Okoroafor et al., 2022). Evidence from developing countries suggests that weaknesses in workforce planning and forecasting frequently result in understaffing, increased workloads, reduced employee morale, and interruptions in service delivery. Consequently, governments and development partners increasingly advocate strategic workforce forecasting as a mechanism for strengthening health systems and improving healthcare outcomes. Effective forecasting enables health managers to anticipate workforce needs and allocate available human resources according to emerging service demands.

In Uganda, healthcare workers are recognized as critical resources influencing service accessibility, responsiveness, continuity, and effectiveness (Ministry of Health, 2021). However, public health facilities continue to experience staffing shortages, uneven geographical distribution of

health workers, workforce attrition, and delays in replacing exiting personnel. Studies indicate that health professionals remain concentrated in urban areas while many rural facilities experience chronic staffing deficiencies that affect service delivery performance (Ssendikadiwa et al., 2020). Such workforce imbalances often result in increased workloads, prolonged waiting times, service interruptions, and reduced patient satisfaction. Although several initiatives have been implemented to strengthen workforce management within the health sector, disparities in staffing adequacy and service delivery persist across districts. Limited empirical attention has specifically examined the contribution of human resource forecasting to perceived health service delivery within Ugandan public health facilities. This study therefore examined the relationship between human resource forecasting and perceived health service delivery in selected districts of Central Uganda.

1.1 Statement of the Problem

According to the Ministry of Health (2021), Uganda's public health facilities continue experiencing staffing shortages, workforce attrition, delays in replacing exiting personnel, and uneven distribution of health workers. The problem is particularly important in the selected districts of Central Uganda, where approximately 260 health personnel serve populations of about 830,584 people (District Development Plans of Luwero, Nakaseke, and Nakasongola District Local Governments, 2020). Ssendikadiwa et al. (2020) observed that health workers remain concentrated in urban areas while many rural facilities continue operating with inadequate staffing levels, creating persistent service delivery challenges. These workforce constraints contribute to excessive workloads, prolonged patient waiting times, service interruptions, and reduced responsiveness to healthcare needs. The World Health Organisation (2016) identifies human resource forecasting as a strategic mechanism for anticipating staffing requirements and supporting timely recruitment, deployment, and workforce development decisions. Despite this potential contribution, staffing inadequacies and disparities in healthcare service delivery continue to persist across public health facilities in Uganda. If these workforce challenges are not adequately addressed, healthcare workers, patients, communities, and health managers are likely to continue experiencing adverse service delivery outcomes. Furthermore, limited empirical evidence exists regarding the influence of human resource forecasting on perceived health service delivery in selected districts of Central Uganda, thereby justifying the present study.

1.2 Objective

The study was set:

To examine the influence of human resource forecasting on perceived health service delivery in selected districts of Central Uganda.

1.3 Research Questions

What is the influence of human resource forecasting on perceived health service delivery in selected Districts?

1.4 Hypothesis

H₁: Human resource forecasting has a statistically significant positive relationship with perceived health service delivery in selected districts of Central Uganda.

2. Literature Review

2.1 Theoretical Review

Human Capital Theory, developed by Becker (1993; 2001) and advanced by Schultz (1961) and Mincer (1974), guided this study. The theory views employees' knowledge, skills, competencies, and experience as productive assets that enhance organisational performance. It assumes that investment in workforce development improves productivity, efficiency, and organisational effectiveness across different institutional settings. Human resource forecasting enables organisations to anticipate future staffing requirements and address competency gaps before service disruptions emerge. The theory was relevant because effective forecasting supports recruitment, deployment, and workforce development necessary for improved health service delivery.

2.2 Human Resource Forecasting and Perceived Health Service Delivery

Globally, human resource forecasting has become an important component of health workforce planning because it enables organisations to anticipate future staffing requirements and service demands. The World Health Organisation (2016) argues that effective workforce planning contributes significantly to improved accessibility, responsiveness, and continuity of healthcare services. Similarly, Armstrong (2020) maintains that forecasting provides organisations with a systematic mechanism for identifying future workforce gaps and implementing appropriate staffing interventions. These scholars agree that forecasting strengthens organisational

preparedness by ensuring that qualified personnel are available when needed. However, much of the global literature focuses on workforce planning broadly, providing limited empirical evidence regarding the specific contribution of forecasting to perceived health service delivery outcomes.

The importance of human resource forecasting is further supported by strategic human resource management literature, which emphasizes aligning workforce supply with organisational objectives and changing environmental conditions. Wright and McMahan (2011) contend that organisations achieve superior performance when future workforce requirements are systematically anticipated and integrated into strategic planning processes. Boxall and Purcell (2016) similarly observe that organisations with effective workforce forecasting mechanisms are better positioned to respond to operational challenges and maintain service quality. While these studies establish the significance of forecasting in organisational performance, they mainly originate from developed economies characterized by relatively stable workforce management systems. Consequently, their applicability to resource-constrained healthcare environments remains uncertain, creating a need for context-specific evidence from developing countries.

Within the African context, healthcare systems continue to face persistent workforce shortages, skills mismatches, and inequitable distribution of health professionals, making forecasting increasingly important. Chankova et al. (2013) argue that strategic workforce planning enables health systems to align available human resources with population health needs and organisational priorities. Likewise, Okoroafor et al. (2022) report that many African countries struggle to maintain adequate staffing levels because workforce planning mechanisms remain weak and poorly coordinated. These deficiencies often result in excessive workloads, reduced employee morale, and interruptions in healthcare delivery. Although regional studies consistently acknowledge the importance of workforce planning, relatively few have examined forecasting as an independent determinant of perceived health service delivery within public healthcare institutions.

In Uganda, human resource forecasting remains a critical concern because healthcare facilities continue to experience staffing shortages, uneven deployment of personnel, and high attrition rates. The Ministry of Health Uganda (2021) recognizes healthcare workers as strategic resources whose availability directly influences service accessibility, effectiveness, and responsiveness. Kakungulu et al. (2018) further observe that inadequate workforce planning contributes to staffing imbalances and limits the capacity of health facilities to meet growing

healthcare demands. Similarly, Ssendikadiwa et al. (2020) found that healthcare workers are disproportionately concentrated in urban areas, leaving many rural facilities understaffed and unable to provide consistent services. Despite these observations, limited empirical evidence exists regarding how human resource forecasting influences perceived health service delivery in Uganda, thereby justifying the present study in selected districts of Central Uganda.

3. Methodology

3.1 Design

The study adopted a convergent parallel cross-sectional research design conducted between 20th June 2025 and 20th September 2025. The study involved collecting and analysing data at a single point in time rather than tracking changes over an extended period. This design was appropriate because it enabled the researcher to capture the current state of human resource planning practices and assess how they relate to service delivery outcomes within a defined timeframe.

3.2 Population and Sample

The target population included 260 health personnel, including medical officers, clinical officers, nurses, midwives, laboratory technicians, and administrative staff from the three districts, as identified in the Local Government Second Development District Plan (2020/21-2024/25) and the Uganda Bureau of Statistics (UBoS) report (2021). According to the district development plans of Luwero, Nakaseke, and Nakasongola District Local Governments (2020), Luwero District had a population of approximately 458,158, Nakaseke District was home to about 191,154 residents, and Nakasongola District had a population of around 181,272. A sample size also refers to the number of items being selected from the universe to constitute a sample, Kothari (2014). From a target population of 260 health personnel, a sample size of 158 was determined using Slovin's formula. However, 150 respondents completed the questionnaire, representing the final quantitative sample used in the analysis

A total of 33 qualitative respondents were selected: Registered Pharmacists (2), HR Officers (4), Health Centre Officials (3), Key Staff Members (3), Patients (11) and Community Members (10). This sample size falls within the recommended range and is considered adequate for achieving thematic saturation. This approach ensures that the study captures rich perspectives on human resource planning practices and their influence on perceived health service delivery in the selected districts.

3.3 Sampling Techniques

Stratified random sampling was used to select health workers, who were first grouped by professional category. Stratified random sampling was then applied to select nurses, midwives, clinical officers, laboratory personnel, pharmacists, and administrative staff proportionately from each stratum.

Census sampling was used for medical officers and dentists because their numbers were small. Therefore, all medical officers and dentists in the selected facilities were included in the study.

Purposive sampling was used to select HR officers, health facility officials, patients, and community members who had relevant experience with human resource forecasting and health service delivery.

3.4 Eligibility Criteria

3.4.1 Inclusion Criteria

The study included health workers employed in public health facilities within the selected districts of Central Uganda. Eligible participants comprised medical officers, clinical officers, nurses, midwives, laboratory personnel, pharmacists, health facility administrators, and human resource officers who had worked in their respective facilities for at least six months. Community members and patients who had utilised services from the selected health facilities and possessed adequate knowledge of service delivery experiences were also included in the qualitative component. Participants were required to provide informed consent before participating in the study.

3.4.2 Exclusion Criteria

Health workers who had served in the selected facilities for less than six months were excluded because they might not have acquired sufficient experience regarding human resource forecasting practices and service delivery processes. Health personnel who were on leave, absent during the data collection period, or unwilling to participate were also excluded. Similarly, patients and community members who lacked adequate knowledge of health service delivery experiences within the selected facilities were not included in the study.

3.5 Data Collection Methods, Instruments and Measurement of Variables

The study employed both quantitative and qualitative data collection methods. Quantitative data were collected using a structured questionnaire administered to health workers

in selected public health facilities. The questionnaire items were adapted from established human resource management and health service delivery literature, particularly the works of Armstrong (2014), Mathis and Jackson (2017), and the World Health Organisation (2016), and were modified to suit the Ugandan public health context. Qualitative data were collected through key informant interviews, focus group discussions, and document review using interview guides, discussion guides, and a document review checklist.

The independent variable, human resource forecasting, was measured using indicators including workforce demand estimation, forecasting future staffing requirements, anticipation of employee turnover, succession preparedness, workforce projections, and staffing plan implementation. The dependent variable, perceived health service delivery, was measured using indicators of health worker responsiveness, availability, quality of care, service accessibility, and patient satisfaction. Respondents rated all questionnaire items on a five-point Likert scale ranging from 1 = Strongly Disagree to 5 = Strongly Agree. Composite mean scores were computed for each construct, with higher scores indicating higher levels of human resource forecasting and perceived health service delivery. Qualitative data obtained through interviews, focus group discussions, and document review were used to complement and explain the quantitative findings.

3.6 Validity and Reliability

The validity of the research instruments was established through expert judgment. The questionnaire, interview guide, focus group discussion guide, and document review checklist were reviewed by experts in human resource management, public administration, and health services research to assess their relevance, clarity, and adequacy in measuring human resource forecasting and perceived health service delivery. Their recommendations were incorporated into the instruments before data collection. The Content Validity Index (CVI) results indicated satisfactory validity levels for all study variables, with Human resource forecasting attaining a CVI of 0.760 and perceived health service delivery attaining a CVI of 0.842, both exceeding the minimum acceptable threshold of 0.70. These findings confirmed that the instruments were valid for measuring the intended constructs.

Reliability was assessed using Cronbach's Alpha coefficient to determine the internal consistency of the questionnaire items. A pilot study was conducted among respondents with characteristics similar to those of the study population but outside the selected districts. The results showed that Human resource forecasting attained a Cronbach's Alpha coefficient of 0.733, while perceived health service delivery attained a coefficient of 0.811. Since all reliability coefficients exceeded the recommended minimum threshold of 0.70, the instruments were considered reliable for data collection and subsequent analysis.

3.7 Data Analysis Plan

Quantitative data were coded, entered, cleaned and analysed using SPSS version 29. Descriptive statistics comprising frequencies, percentages, means and standard deviations were computed. Pearson Product-Moment Correlation and simple linear regression analyses were performed to establish the relationship between human resource forecasting and perceived health service delivery. Statistical significance was tested at $p \leq .05$.

Qualitative data obtained through key informant interviews, focus group discussions, and document review were transcribed verbatim and analysed thematically.

3.8 Ethical Considerations

Ethical approval was obtained from Clarke International University Research Ethics Committee (2025-1657) and Uganda National Council of Science and Technology (SS4063ES) before commencement of the study. Administrative permission was obtained from the District Health Officers of Nakasongola, Luwero and Nakaseke districts. Participation was voluntary, and informed consent was obtained from all respondents before data collection. Confidentiality and anonymity were maintained by excluding personal identifiers from questionnaires and interview transcripts. Data were securely stored and accessed only by the research team.

4. Results and Discussion

4.1 Demographic Characteristics of Respondents

Table 1: Demographic characteristics of respondents (n = 150)

Characteristics		n (%)
Gender	Male	79 (52.7)
	Female	71 (47.3)
Age Group (Years)	≤20	1 (0.7)
	20–25	31 (20.7)
	26–30	45 (30.0)
	31–35	17 (11.3)
	36–40	33 (22.0)
	≥40	23 (15.3)
Highest Education Level Attained	Certificate	13 (8.7)
	Diploma	47 (31.3)
	Degree	72 (48.0)
	Master's Degree	18 (12.0)
Marital Status	Single	41 (27.3)
	Married	85 (56.7)
	Divorced	11 (7.3)
	Widowed	7 (4.7)
	Separated	6 (4.0)
Period of Stay in Selected Districts	1–3 years	67 (44.7)
	4–7 years	46 (30.7)
	≥8 years	37 (24.7)

Of the 150 respondents, the majority were male (52.7%, n = 79), while females constituted 47.3% (n = 71). Most respondents were aged 26–30 years (30.0%, n = 45), followed by those aged 36–40 years (22.0%, n = 33). Regarding educational attainment, nearly half possessed bachelor's degrees (48.0%, n = 72), while 31.3% (n = 47) held diplomas and 12.0% (n = 18) had master's degrees. More than half of the respondents were married (56.7%, n = 85), and the majority had worked in the selected districts

for one to three years (44.7%, n = 67). These characteristics suggest that respondents possessed adequate educational qualifications and professional experience to provide reliable information regarding human resource forecasting and health service delivery.

4.2 Descriptive Results for Study Variables

Table 2: Descriptive Statistics of Study Variables (N = 150)

Variables	N	Mean	SD	Interpretation
Human Resource Forecasting	150	4.509	0.563	Very High
Perceived Health Service Delivery	150	4.777	0.419	Very High

The results in Table 2 indicate that Human resource forecasting was rated very highly among respondents (M = 4.509, SD = 0.563), suggesting that health facilities generally implemented workforce demand estimation, staffing projections, succession planning, turnover anticipation, and recruitment planning practice. Perceived health service delivery was rated very highly (M = 4.777, SD = 0.419), implying that respondents perceived healthcare services to be responsive, reliable, accessible, and of satisfactory quality. The relatively low standard

deviation for perceived health service delivery indicates consistency in respondents' perceptions across the selected districts.

4.3 Relationship and Influence of Human Resource Forecasting on Perceived Health Service Delivery

Table 3: Correlation between Human Resource Forecasting and perceived service delivery (n =150)

Variable	1	2
human resource forecasting	1	
Perceived Health Service Delivery	.386**	1

p < .01

The results demonstrated a moderate positive relationship between human resource forecasting and perceived health service delivery ($r = .386$, $p < .001$), implying that improvements in forecasting practices were associated with better service delivery outcomes.

4.4 Influence of Human Resource Forecasting on Perceived Health Service Delivery

Table 4: Regression Analysis of Human Resource Forecasting and Perceived Health Service Delivery

Variable	B	β	t	P
Human Resource Forecasting	0.648	0.386	5.091	< .001
R	R ²	Adjusted R ²	F	P
.386	.149	.143	25.918	< .001

Human resource forecasting had a statistically significant positive relationship with perceived health service delivery ($r = .386$, $p < .001$). Regression analysis revealed that human resource forecasting significantly predicted perceived health service delivery ($B = .648$, $\beta = .386$, $t = 5.091$, $p < .001$). The model explained 14.9% of the variance in perceived health service delivery ($R^2 = .149$,

Adjusted $R^2 = .143$) and was statistically significant ($F = 25.918$, $p < .001$).

4.5 Qualitative Findings on Human Resource Forecasting and Perceived Health Service Delivery

Table 5: Qualitative Findings on Human Resource Forecasting and Perceived Health Service Delivery

Theme	Sub-theme	Quote	Source
Strategic Anticipation of Staffing Needs	Planning for disease outbreaks and seasonal surges	“During malaria outbreaks, the patient load doubles. We plan in advance to have extra laboratory staff and clinicians, otherwise services would collapse.”	Hospital Administrator, Nakaseke (2025)
	Balancing routine and emergency care	“We plan staff rotations so that even when emergencies come in, outpatient and maternal care still go on without delays.”	Senior Nursing Officer, Luwero (2025)
Human Resource Forecasting and Specialisation	Matching skills with workload	“Midwives are allocated to maternity, pediatric nurses to children’s wards; this reduces errors and ensures patients are attended by the right professionals.”	Senior Nurse, Luwero (2025)
	Optimizing deployment of experienced staff	“The hospital could avoid this if younger staff were strategically scheduled alongside senior staff. That way, patients benefit from the expertise while the workload is shared.”	Clinical Officer, Nakasongola (2025)
Service Continuity and Efficiency	Ensuring continuity despite staff absences	“Forecasting helps us redistribute duties in advance. When a midwife goes on maternity leave, we already know months ahead and plan accordingly.”	District Health Officer, Nakasongola (2025)

Workload Fairness and Equity	Fair distribution of workload	“When management uses forecasting tools, the assignments are more balanced. It feels fairer and you can work with more commitment.”	Nurse, Nakasongola Health Centre IV (2025)
	Improved job satisfaction and productivity	“When I know my skills are considered in scheduling, I feel valued and it makes me work with more passion.”	Medical Officer, Luwero (2025)
Knowledge Sharing and Professional Development	Mentorship opportunities	“We intentionally schedule younger clinicians to work alongside senior ones. The younger ones pick up clinical judgment, confidence in decision-making and bedside etiquette.”	Senior Medical Officer, Luwero General Hospital (2025)
	Creating collaborative work environments	“When staff rotate across departments and interact with different colleagues, we learn each other’s strengths and weaknesses.”	Nursing Officer, Nakaseke Hospital (2025)
Challenges in Human Resource Forecasting	Unpredictable patient surges	“Even with good planning, sometimes patient numbers shoot up unexpectedly and then we struggle. The available staff becomes overstretched.”	Hospital Director, Nakaseke General Hospital (2025)
	Limited autonomy and staff shortages	“We can forecast well and prepare schedules, but when staffs are transferred by the ministry without replacements, we remain understaffed.”	Administrator, Nakasongola Health Centre IV (2025)

The qualitative findings revealed six major themes through which human resource forecasting influences perceived health service delivery. Participants reported that forecasting facilitates strategic anticipation of staffing requirements, workforce specialisation, continuity of healthcare services, equitable workload distribution, and professional development opportunities. Respondents further emphasised that forecasting promotes mentorship, teamwork, and proactive workforce management, thereby enhancing service efficiency and quality. However, unpredictable patient surges, limited staffing autonomy, and persistent workforce shortages were identified as key challenges constraining the effectiveness of forecasting practices within public health facilities.

4.6 Discussion of Findings

The findings revealed a statistically significant positive relationship between human resource forecasting and perceived health service delivery ($r = .386, p < .001$). Regression analysis further demonstrated that human resource forecasting significantly predicted perceived health service delivery ($B = .648, \beta = .386, t = 5.091, p < .001$), accounting for 14.9% of the observed variation in service delivery outcomes ($R^2 = .149$). These findings suggest that health facilities that effectively anticipate future workforce requirements, prepare for staff turnover, and plan staffing needs are more likely to achieve improvements in service accessibility, responsiveness, continuity, and quality. The findings imply that forecasting enables healthcare organisations to proactively address workforce gaps before they negatively affect service delivery performance. The findings are consistent with Human Capital Theory, which emphasises that

organisational performance depends on the ability to invest in, develop, and strategically manage human resources. Forecasting facilitates this process by enabling healthcare organisations to anticipate future workforce requirements and prepare appropriate recruitment, deployment, and development strategies.

The results are consistent with previous studies that identify workforce forecasting as an important determinant of organisational effectiveness and service delivery performance. Chankova et al. (2013) observed that strategic workforce planning enables health systems to align available human resources with emerging population health needs and organisational priorities. Similarly, Wright and McMahan (2011) argued that organisations achieve superior performance when future workforce requirements are systematically anticipated and integrated into strategic planning processes. Boxall and Purcell (2016) further reported that organisations with effective forecasting mechanisms are better able to respond to operational challenges and maintain service quality. The consistency between the present findings and earlier studies suggests that forecasting remains a critical component of effective health workforce management.

The qualitative findings reinforced the quantitative results by demonstrating how forecasting contributes to health service delivery through strategic anticipation of staffing needs, workforce specialization, continuity of care, workload fairness, and professional development. Participants reported that forecasting enabled health facilities to prepare for disease outbreaks, balance routine and emergency care, and anticipate staff absences through proactive staffing arrangements. Respondents further noted that forecasting facilitated equitable workload

distribution, mentorship opportunities, and collaborative work environments, all of which contributed to improved staff morale and service efficiency. These findings indicate that forecasting extends beyond workforce numbers and contributes to organisational preparedness, employee motivation, and continuity of healthcare services.

However, participants also identified several challenges limiting the effectiveness of forecasting practices. Unpredictable patient surges, disease outbreaks, government staff transfers, staffing shortages, and limited autonomy in workforce management were reported as major constraints. These findings suggest that although forecasting contributes significantly to service delivery, its effectiveness depends on the availability of accurate workforce information, adequate financial resources, supportive staffing policies, and timely recruitment processes. Consequently, forecasting should be complemented by broader health workforce reforms and investments that enhance the capacity of health facilities to implement staffing projections effectively.

Recent evidence continues to emphasize the importance of workforce forecasting and strategic human resource planning within healthcare systems. Okoroafor et al. (2022) reported that many African countries continue to experience workforce shortages and staffing imbalances because workforce planning systems remain weak and fragmented. Likewise, the World Health Organisation (2022) highlights forecasting as a critical mechanism for ensuring the availability of appropriately skilled health workers required to meet changing healthcare demands. The present findings, therefore, contribute to existing evidence by demonstrating that human resource forecasting remains an important predictor of perceived health service delivery within Uganda's public health sector. These findings suggest that strengthening forecasting systems may improve workforce preparedness, organisational responsiveness, and healthcare service delivery outcomes in resource-constrained settings. The findings have practical implications for healthcare managers because accurate workforce forecasting enables timely recruitment, proactive workforce deployment, continuity of healthcare services, and effective management of staffing shortages. Strengthening forecasting practices may therefore improve responsiveness, efficiency, and quality of healthcare services, particularly within resource-constrained public health facilities. The study was limited to selected districts of Central Uganda; therefore, caution should be exercised when generalising the findings to other regions with different workforces and healthcare contexts.

5. Conclusions and Recommendations

5.1 Conclusion

The study concludes that human resource forecasting is a significant predictor of perceived health service delivery in public health facilities. Accurate forecasting improves staffing adequacy, workforce deployment, continuity of care, and organisational responsiveness. Consequently, strengthening forecasting systems can contribute substantially to improved health service delivery outcomes in Uganda.

5.2 Recommendations

1. The Ministry of Health should institutionalise workforce forecasting within district health workforce planning systems.
2. District health offices should conduct annual staffing forecasts based on projected healthcare demands and workforce trends.
3. Health facilities should maintain updated workforce databases to facilitate evidence-based forecasting and recruitment decisions.
4. The government should strengthen workforce information systems to support accurate forecasting of staffing requirements.
5. Future studies should investigate factors influencing the effectiveness of human resource forecasting in healthcare organisations.

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