

Research Article

Sustainability of quality improvement teams in selected regional referral hospitals in Tanzania

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Abstract

Objective: The aim of this study was to determine the sustainability of hospital quality improvement teams and to assess factors influencing their sustainability in the regional referral hospital in Tanzania.

Design: A cross-sectional study was conducted between April and August of 2018.

Setting and participants: The study was conducted in four selected regional referral hospitals in Tanzania. All members of the quality improvement teams available during the study period were recruited.

Intervention: Quality improvement teams and their activities.

Main outcome measure: The primary outcome was sustainability total scores. The secondary outcomes were process, staff and organizational sustainability scores. The sustainability of quality improvement teams was assessed by using the National Health Service Institute for Innovation and Improvement Sustainability Model self-assessment tool.

Results: The overall mean sustainability score was 59.08 (95% CI: 53.69–64.46). Tanga Regional Referral Hospital had the highest mean sustainability score of 66.15 (95% CI: 55.12–77.18). Mbeya Regional Referral Hospital obtained the lowest mean sustainability score of 52.49 (95% CI: 42.96–62.01). The process domain had the highest proportionate mean sustainability score of 22.46 (95% CI: 20.58–24.33) across four hospitals. The staff domain recorded the lowest proportionate sustainability score of 27.28 (95% CI: 24.76–29.80).

Conclusions: Perceived less involvement of senior leadership (hospital management teams) and clinical leadership (heads of clinical departments) and infrastructure limitation appeared to negatively affect the sustainability of the hospital quality improvement teams. Our study underscores the importance of establishing a permanent and fully resourced Quality Improvement Unit—with team members employed as full-time staff.

Key words: quality improvement teams, sustainability, regional referral hospital

Introduction

Tanzania like its other East African counterparts has been experiencing a simultaneous double burden of communicable and non-communicable diseases [1]. Over the last decade, injury-related deaths have increased considerably [2]. In 2016, communicable

diseases, perinatal and maternal causes and nutritional conditions accounted for 56% of total deaths, whereas non-communicable diseases and deaths due to injury accounted for 33 and 11% of all deaths, respectively [3]. Overall, malaria was the leading communicable-related cause of deaths (12.75%) in 2016, followed

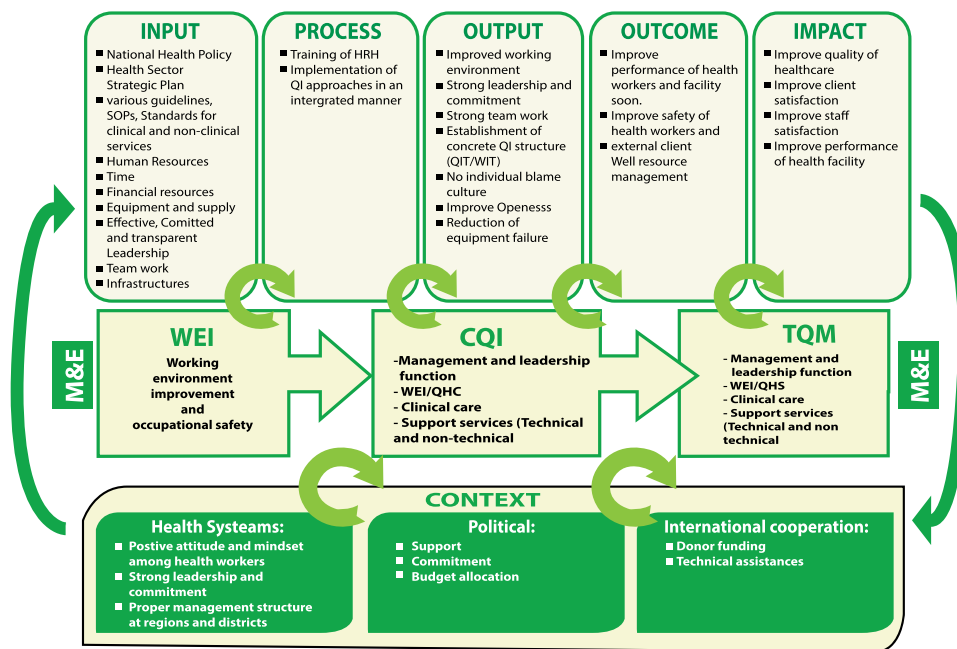


Figure 1 Tanzania Quality Improvement Framework Model in health care. Source: The Tanzania Quality Improvement Framework in Health Care of 2011–2016 [10].

by lower respiratory infections (10.08%), HIV and AIDS (8.04%) and anemia (7.78%) [2]. Cardiovascular diseases were the leading causes of all non-communicable disease-related deaths (13%), cancer (7%), chronic respiratory diseases (2%) and diabetes, (2%) and other non-communicable diseases accounted to 10% of all deaths [3].

The complex burden of diseases associated with specific health system challenges such as acute shortage of human resources for health, small budget to finance all health sector priorities, shortage of medical supplies and drugs and infrastructure limitation have largely contributed the health status and health care indicators for Tanzania to remain relatively poor [4]. These challenges have contributed to the unsatisfactory health outcomes [5].

In order to respond to the aforementioned challenges and attain improved health outcomes, the government of Tanzania introduced reforms that aimed at strengthening the capacities of the hospitals to provide high-quality health services to respond to the increasing health service needs. The reform package includes increasing the number of qualified health staff, increasing the availability of high-technology diagnostic equipments, improving hospital funding, expanding hospital infrastructures and strengthening capacities of hospital management to effectively plan, manage and account for both financial and human resources [6].

Despite these reforms, studies have shown that the level of patient satisfaction with the quality of health services in the regional referral hospitals (RRH) in Tanzania is still low [7]. Specific reasons for dissatisfaction cited by patients among others were long waiting time, drug stock-outs, poor patient record-keeping systems, shortage of qualified health staff and inadequacy of essential medical supplies [7, 8].

In addressing the challenges associated with quality of care, the government has developed and implemented several initiatives as an effort to improve quality of care at all levels of service provision. These initiatives include formulation of various policies and strategies to guide the provision of quality health services that are responsive to

the rapidly growing population as well as epidemiological transition [5, 9–12].

In 2004, the first Tanzania Quality Improvement Framework (TQIF) was developed with eight priority areas, namely, strengthening leadership, structures and mechanisms for QI; enhancing active participation of potential partners to improve quality of care; strengthening advocacy for QI; enhancing sustainability and equity in health care; strengthening capacity and performance of health service providers; strengthening supportive supervision, monitoring and surveillance; financial resource mobilization for QI, and application of operational research to evaluate QI interventions [12]. However, the implementation of the TQIF encountered a number of challenges that include limited QI leadership at all levels of health service provision, weak and uncoordinated supportive supervision, inefficient referral systems, presence of uncoordinated multiple QI approaches and reporting structures and inadequate funding for QI interventions. As a result, the revision of the TQIF was deemed necessary.

In 2011, the revised Tanzania HealthCare Quality Improvement Framework (THQIF) was launched by the Tanzania's Ministry of Health and Social Welfare to achieve two main purposes: to motivate human resources for health and stakeholders at all levels in the health sector to design and implement innovative approaches for QI and to identify appropriate actions that should be implemented to institutionalize continuous quality improvement at all levels of health care delivery in accordance to the country's interest and vision [10]. The THQIF consists of four major interrelated, interconnected and interdependent pillars (Fig. 1). The first pillar focuses on the logical approach that has five dimensions—input, process, output, outcome and impact; the second pillar considers improvement of working environment; the third pillar focuses on the context within which QI approaches are implemented; and the fourth pillar pays attention to monitoring and evaluation of health care quality initiatives [10].

Although the framework considers QI as everybody's responsibility, the framework establishes hospital QI teams with clearly defined

Table 1 Profile of the study settings

Name of region	Name of the hospital	Bed capacity	Total number of staff	Estimated outpatient attendance in 2017
Tanga	Tanga RRH	412	442	151,910
Mwanza	Sekou Toure RRH	319	417	125,448
Singida	Singida RRH	235	400	73,191
Mbeya	Mbeya RRH	140	318	119,217

Source: Hospitals ' profile - 2018 . RH : Regional Referral Hospital.

roles and responsibilities. The introduction of QI teams focuses on accelerating the decision-making process and increasing commitment of hospital management and staff towards QI in the hospitals and ensures provision timely and responsive clinical and non-clinical services. Initially, QI teams were established in 4 regional referral hospitals in 2007 and gradually were scaled up to all 27 regional referral hospitals throughout the country [10].

The teams provide hospital managements with actionable recommendations for identified areas that need improvement. Evidence suggests that the QI teams through the implementation of various QI interventions at hospital level have relatively contributed to reducing clients' complaints, improving management of patient records, improving overall hospital cleanliness and reducing patients' waiting time [13]. However, literature has shown that most of the QI teams are ineffective and lack consistency in the implementation of QI interventions, and some of QI interventions are partially implemented [14]. Literature suggests that stronger, effective, efficient and sustainable QI teams are desired for the health facilities to function optimally [15]. This article attempts to assess factors influencing the sustainability of hospital QI teams and to determine their level of sustainability.

Methods

Study design

This study was part of a larger mixed method study. The current study was a cross-sectional study and was conducted from April to August 2018.

Study area

The study was conducted in four selected regional referral hospitals located in four regions. The selected hospitals were Singida Regional Referral Hospital located in Singida region within central Tanzania, Tanga Regional Referral Hospital located in Tanga region in the eastern coast of Tanzania, Mbeya Hospital located in the southwest highlands of Tanzania and Sekou Toure Hospital located along the shore of Lake Victoria in Tanzania. The selected hospitals were representing the high- and low-performing regional referral hospitals with regard to QI implementation progress as recorded by the Ministry of Health, Community Development, Gender, Elderly and Children in 2016 (Table 1).

Sample size

Our target was to enroll all (76) members of QI teams across the four hospitals.

Data collection and analysis

We adopted the National Health Service (NHS) Institute for Innovation and Improvement Sustainability Model (Table 2), and the NHS-SM self-assessment tool was used to collect data [16].

The tool was translated into Kiswahili (language commonly used in Tanzania). At first, the translation was done by the principal investigator, and then two different language experts were engaged to check the precision and validity of translation. The tool was pretested to 12 members of the hospital QI teams before the actual

Table 2 Sustainability model criteria for sustainability

Description of variable	Maximum score
Process	31.5
Benefits beyond helping patients—Does the change reduce waste, duplication and added effort?	8.7
Credibility of evidence—Are the benefits to staff, patients and organization visible?	9.1
Adaptability of improved process—Does the change rely on an individual, group of people or finances to keep it going?	7
Effectiveness of system to monitor progress—Is special monitoring required?	6.7
Staff	52.5
• Staff involvement and training to sustain the change—Play a part in implementation and design	11.5
• Staff behavior to sustaining change—Staff inputs	11
• Senior leadership engagement—Are they involved and promote it?	15
• Clinical leadership engagement—Are they involved and promote it?	15
Organization	16.9
• Fit with organization strategic aims and culture—Is the change aligned to organization strategic aims?	7.2
• Infrastructure for sustainability—Staff facilities and equipment to sustain change	9.7
Maximum score	100.9
Minimum sustainability score	55

Source: NHS Institute for Innovation and Sustainability Model [16].

Table 3 Gender and length of service of QI team members ($n = 60$)

Variable	Frequency distribution	Percentage
Gender		
Male	31	51.7
Female	29	48.3
Length of service in the QI team		
<12 months	12	20
13–36 months	20	33.3
>37 months	28	46.7

data collection process in order to address potential threats associated with the questions, language and format of the tool.

In each hospital, our study team obtained a list of all available members of QI teams. NHS-SM self-assessment tools were distributed to a total of 60 members of QI team who were present at the hospitals. Before the QI team members started to fill in the tool, the principal investigator provided explanation on how to use the NHS-SM assessment tool. Each study participant was requested to complete the tool independently.

Data from the NHS-SM self-assessment tool were cleaned and entered into Microsoft Excel 2010. The sustainability master score system was used to calculate the total score. The domain scores for process, staff and organization were summed to obtain total sustainability for each hospital, and calculation was performed to obtain overall total sustainability scores for all hospitals. A score of 55 or higher was considered to offer optimism for sustainability of hospital QI teams. The one-way analysis of variance (ANOVA) was used to determine the statistical significance ($P < 0.05$) between the four hospitals.

Ethical considerations

Ethical approval was sought and obtained from the National Institute for Medical Research of Tanzania (reference number NIMR/HQ/R.8a/Vol.IX/2666) and from Biomedical Research and Ethics Committee of the University of KwaZulu-Natal, South Africa (reference number BE: 606/17). Permissions to conduct the study were sought and granted by relevant authorities at each level. Informed consent was obtained from all participants after informing them about the objectives, procedures, risks and benefits of the study. All participants were assured about the confidentiality of their information.

Results

Response rate

We collected data from 60/76 (79%) of members of hospital QI teams in four regional referral hospitals. The majority of the respondents 31 (51.7%) were female. Of the 60 respondents, the majority 28 (46.7%) worked in the QI team for more than 37 months (see Table 3).

Overall sustainability scores

Tanga RRH hospital had the highest mean sustainability score of 66.15 (95% CI: 55.12–77.18). Mbeya RRH obtained the lowest mean sustainability score of 52.49 (95% CI: 42.96–62.01). The mean sustainability scores for all four hospitals were 59.08 (95% CI: 53.69–64.46) (Table 4).

Table 4 Overall and domains sustainability scores

Variables	Tanga RRH	Sekou Toure RRH	Singida RRH	Mbeya RRH	Overall domain score
Benefits	7.96 (95% CI: 7.16–8.75)	7.51 (95% CI: 6.56–8.46)	7.49 (95% CI: 6.52–8.45)	6.59 (95% CI: 5.41–7.77)	7.38 (95% CI: 6.91–7.84)
Credibility	7.50 (95% CI: 6.67–8.33)	6.20 (95% CI: 5.03–7.37)	7.02 (95% CI: 6.06–7.98)	5.41 (95% CI: 4.39–6.42)	6.51 (95% CI: 6.01–7.01)
Adaptability	5.64 (95% CI: 4.54–6.74)	4.34 (95% CI: 3.33–5.35)	4.88 (95% CI: 3.73–6.03)	4.03 (95% CI: 2.97–5.08)	4.70 (95% CI: 4.18–5.22)
Effectiveness	4.68 (95% CI: 3.73–5.62)	4.53 (95% CI: 3.56–5.50)	3.06 (95% CI: 2.83–3.29)	3.21 (95% CI: 2.66–3.77)	3.87 (95% CI: 3.48–4.26)
Process	25.78 (95% CI: 22.11–29.45)	22.58 (95% CI: 18.48–26.67)	22.45 (95% CI: 19.15–25.75)	19.23 (95% CI: 15.42–23.04)	22.46 (95% CI: 20.58–24.33)
Staff involvement	9.94 (95% CI: 8.56–11.32)	6.73 (95% CI: 5.45–8.01)	6.36 (95% CI: 5.52–7.20)	5.65 (95% CI: 4.51–6.80)	7.12 (95% CI: 6.44–7.80)
Staff behaviors	7.21 (95% CI: 5.51–8.90)	6.26 (95% CI: 4.61–7.91)	7.07 (95% CI: 5.47–8.66)	5.89 (95% CI: 4.74–7.04)	6.59 (95% CI: 5.87–7.30)
Senior leadership	7.39 (95% CI: 5.52–9.25)	7.60 (95% CI: 5.64–9.56)	5.93 (95% CI: 5.79–6.08)	6.65 (95% CI: 5.37–7.94)	6.90 (95% CI: 6.19–7.60)
Clinical leadership	6.44 (95% CI: 6.15–6.74)	7.51 (95% CI: 5.93–9.09)	6.38 (95% CI: 6.08–6.68)	6.30 (95% CI: 5.98–6.62)	6.68 (95% CI: 6.25–7.10)
Staff	30.98 (95% CI: 25.74–36.21)	28.10 (95% CI: 21.63–34.57)	25.74 (95% CI: 22.86–28.62)	24.49 (95% CI: 20.59–28.40)	27.28 (95% CI: 24.76–29.80)
Organizational aims	4.49 (95% CI: 3.53–5.44)	4.78 (95% CI: 3.83–5.72)	4.15 (95% CI: 3.33–4.97)	3.71 (95% CI: 3.20–4.21)	4.28 (95% CI: 3.89–4.67)
Infrastructure	4.91 (95% CI: 3.73–6.08)	5.51 (95% CI: 4.01–7.01)	4.73 (95% CI: 3.62–5.83)	5.05 (95% CI: 3.75–6.36)	5.06 (95% CI: 4.47–5.65)
Organization	9.39 (95% CI: 7.27–11.52)	10.29 (95% CI: 7.84–12.74)	8.87 (95% CI: 6.95–10.80)	8.76 (95% CI: 6.95–10.57)	9.34 (95% CI: 8.36–10.33)
Total sustainability score	66.15 (95% CI: 55.12–77.18)	60.96 (95% CI: 47.94–73.98)	57.06 (95% CI: 48.95–65.17)	52.49 (95% CI: 42.96–62.01)	59.08 (95% CI: 53.69–64.46)

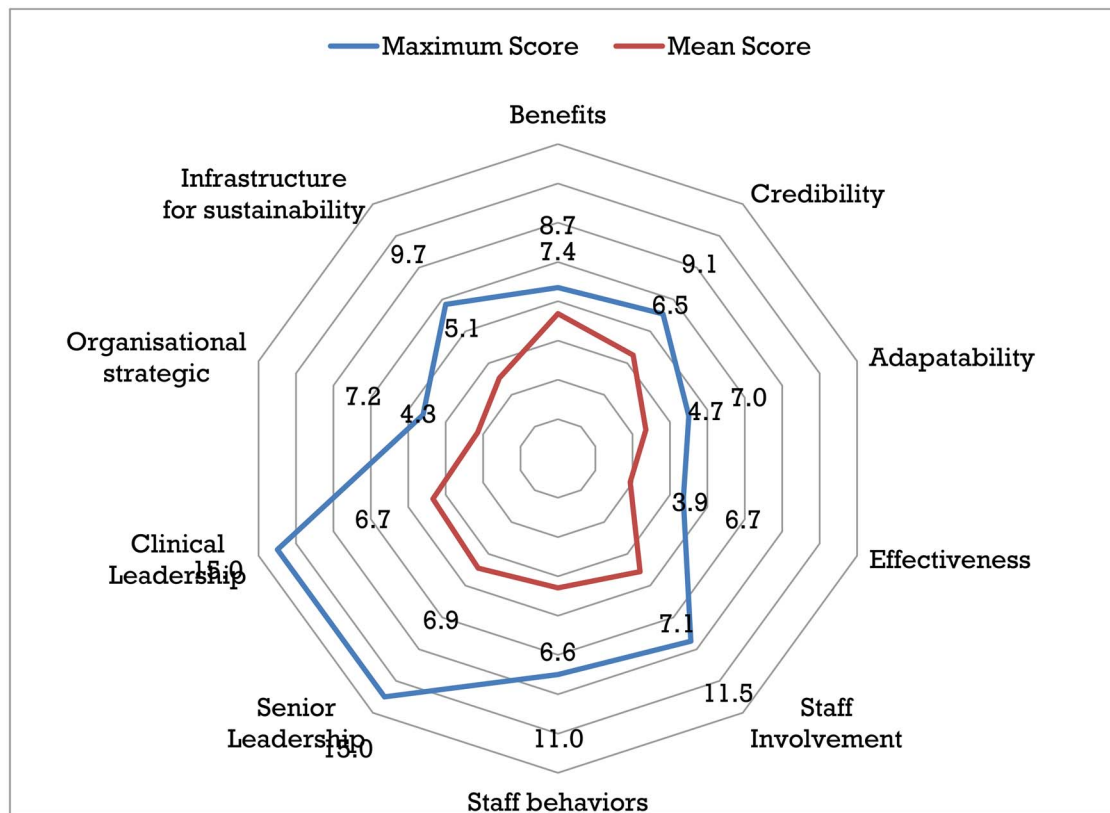


Figure 2 Sustainability mean domain scores across the four RRHs.

Domain sustainability scores

Process domain. Tanga RRH obtained the highest process domain mean sustainability score of 25.78 (95% CI: 22.11–29.45). Mbeya RRH obtained the lowest mean process domain score of 19.23 (95% CI: 15.42–23.04). The process domain attained highest proportionate mean sustainability score of 22.46 (95% CI: 20.58–24.33) across four hospitals.

Organization domain. Sekou Toure RRH had the highest mean organization domain score of 10.29 (95% CI: 7.84–12.74). Singida RRH and Mbeya RRH obtained the mean organization domain scores of 8.87 (95% CI: 6.95–10.80) and 8.76 (95% CI: 6.95–10.57), respectively. The organization domain attained the sustainability mean score of 9.34 (95% CI: 8.36–10.33).

Staff domain. The staff domain attained the lowest proportionate sustainability score of 27.28 (95% CI: 24.76–29.80). Tanga RRH obtained the highest mean staff domain score of 30.98 (95% CI: 25.74–36.21). Mbeya RRH had the lowest mean staff domain score of 24.49 (95% CI: 20.59–28.40).

Domain level sustainability scores

The strongest factors that were recorded to promote sustainability across four hospitals were benefits of the hospital QI teams beyond helping patients 7.38 (95% CI: 6.91–7.84), followed by credibility of evidence 6.51 (95% CI: 6.01–7.01), adaptability of improved process 4.70 (95% CI: 4.18–5.22), staff involvement and training to sustain

the process 7.12 (95% CI: 6.44–7.80) and staff behaviors towards sustaining the 6.59 (95% CI: 5.87–7.30) (Fig. 2).

Three main factors that were perceived to negatively affect the sustainability of hospital QI teams across all four hospitals were inadequate involvement of clinical leadership (heads of clinical departments and units) 6.68 (95% CI: 6.25–7.10), inadequate of engagement of senior hospital leadership (hospital management teams and hospital advisory boards) 6.90 (95% CI: 6.19–7.60) and weak infrastructures for sustainability 5.06 (95% CI: 4.47–5.65).

Discussion

There have been several studies that have examined the sustainability of health-based interventions implemented in Tanzania [20, 21], but according to literature search and authors' knowledge, no studies were found to have assessed the sustainability of hospital QI teams in Tanzania—and by using the NHS Institute for Innovation and improvement sustainability model.

The overall results of this study have shown that mean sustainability of QI teams across the hospitals was 59.08, ranging between 52.49 and 66.15. These findings are similar to an observational cross-sectional study conducted in South Africa that found four (11%) of the studied health facilities obtained an overall sustainability score of less than 55 with regard to the implementation of integrated chronic disease management (ICDM) model [17].

In the current study, QI teams were found to be multidisciplinary in composition and had reasonable knowledge about hospital QI interventions. The fact that the majority of the members in the QI

teams served within the same teams for more than 3 years appeared to be an important factor to understand how the team can sustained within the changing contexts [18]. Consistent with previous findings of the study conducted to assess the effectiveness of health care teams in the National Health Service in the UK, multilevel and multidisciplinary health care teams were perceived to be effective, innovative and sustainable [19]. Although the multidisciplinary nature of the team was perceived to embrace their sustainability, working as full-time members in the QI teams while executing their primary professional roles and responsibilities appeared to affect team performance and sustainability.

Of the three sustainability domains, process appeared to be an important domain that influenced the sustainability of QI teams. These results suggest that the existence of monitoring processes to monitor QI implementation progress was considered important in raising early awareness of the potential sustainability challenges and provided opportunity for teams to address these challenges and facilitated the achievement of the expected change. This finding is similar to findings of the study conducted at the primary care clinics in South Africa that indicate the sustainability appeared to be achieved when institutional processes focus on bringing organizational change [17].

In contrast to an earlier study [17], the positive behavior and the readiness of the QI teams towards sustaining changes that appeared to have already occurred were supportive to sustainability. The positive behavior demonstrated by members of the QI teams was largely influenced by the size of the teams. The literature indicates smaller teams enjoy high level of team communication and interaction [19]. Members of QI teams who were the frontline overseer of the implementation of QI initiatives were encouraged by the teams' leadership to express their thoughts without fear of being intimidated; hence, they felt as part and parcel of the decision-making processes [19].

Perceived active involvement and training of hospital staff to sustain change process facilitated the sustainability of QI teams. Similar findings were reported in an empirical study that showed that continuous staff engagement and training promote knowledge, skills and abilities of staff and enhance sustainability [17]. In the current study, trainings were important in supplementing team members' own theoretical and practical skills and appeared to influence teams' performance and sustainability. Although trainings conducted were perceived to be less comprehensive, the aspects covered by trainings such as concepts and practices of client care, teamwork, patient safety and use of various QI tools were important for the teams' success and sustainability.

Our study has shown that there were low involvement hospital leadership (hospital management teams) and clinical leadership (heads of clinical departments, senior nursing and allied health professionals) and that may adversely affect the sustainability of the hospital QI teams. Less optimal involvement of the institutional leadership during the change process impedes the sustainability of healthcare teams [17]. The extent to which institutional leadership invest their time and how they demonstrate their competencies in supporting the QI teams throughout the change process has effect on the overall team performances and may positively influence sustainability of the team [20].

The results of our study have shown that the benefits of change felt by the teams were beyond helping patients and were perceived to influence the sustainability of QI teams. However, the QI teams were facing increasing pressures to improve their overall performances within the limited amount of resources allocated to implement the

planned QI interventions. Studies have shown that the sustainability of healthcare teams depends, among others, on the availability of adequate and necessary resources to implement the planned interventions and to support the team to access professional trainings and skill developments [21].

The overall staff domain scored below the minimum score for sustainability and was lower compared to process and staff domains. These results were consistent with the results of an empirical study conducted at the primary clinics in South Africa that found process and organization domains provided higher optimism for sustainability [17]. Majority of the public hospitals in the country are overcrowded and understaffed [22]. Although QI team members were appointed to oversee the implementation of QI interventions, they were also required to fulfill their substantive employment functions. This could partly cause frustration and inconsistency when executing their primary professional roles and responsibilities of coordinating QI activities.

Infrastructure for sustainability was perceived to negatively affect the sustainability of QI teams. Although hospitals serve many patients than the estimated capacities, the infrastructure and equipment were limited. In addition, many of the infrastructures were outdated and did not match with current transformation with the health care industry. This result is in line with findings of a study conducted at 42 primary health care facilities in three districts in South Africa that showed many of the health facilities were architecturally outgrown and were serving large catchment area, with large volumes of patients [17].

Study limitations

Our study had four main limitations as follows: firstly, we used self-administered sustainability assessment tool to collect data which is susceptible to reporting bias. Secondly, in assessing the sustainability of the team, we did not measure other factors that could facilitate or inhibit sustainability of the hospital QI teams. Thirdly, we used convenient sampling methods for the selection of study participants, of whom some were relatively new in the teams and may lead to bias in the results. Lastly, our selection of hospitals with high- and low-performance scores with regard to QI implementation progress while excluding hospitals with moderate scores, as well as small sample size may not guarantee representativeness and generalizability of the results in all regional referral hospitals in Tanzania.

Conclusions

The findings of this study indicate that perceived benefits of team beyond helping patients, credibility of evidence, adaptability of improved change process, effectiveness of available systems to monitor progress, staff involvement and training and staff behavior towards sustaining change contributed substantially to the sustainability score for the process and staff domains. The common negative factors for sustainability were inadequate involvement of senior leadership and clinical leadership and infrastructure limitations.

The study underscores the importance of establishing permanent and fully financially resourced Quality Improvement Unit with full-fledged responsibilities to oversee QI interventions. The members of QI teams working in the Quality Improvement Unit should be exempted from their professional responsibilities in order to enable them to fully execute their respective new roles and responsibilities more effectively. High involvement of hospital management teams,

leadership of clinical departments and improvement of hospital infrastructure might eventually increase the performance and sustainability of QI teams. We expect the results of this study to have policy impact resulting in improved performance and sustainability of hospital QI teams in Tanzania.

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