Evaluation of practice change in Tanzanian health professionals 12 months after participation in an Infection Prevention and Management Course

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Abstract

Background: Hospital-acquired infection (HAI) is a problem confronting developing countries. Education programmes have been shown to be effective in increasing awareness and changing practice in health professionals.

Methods: Practice change in health professionals who completed an Infection Prevention and Management Course in Tanzania was explored via focus group 12 months after completion of the course.

Findings: Positive changes in infection control practice were found, along with barriers to more widespread change.

Conclusions: Providing tailored and continuing education programs to hospital staff, including managers, is recommended.

Keywords

Infection control, education, Tanzania, hospital-acquired infection

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Background

Hospital-acquired infection (HAI) affects millions of patients worldwide (Pittet et al., 2008). The existing data, albeit limited, indicate that the burden in developing countries is particularly high, with possible determinants including poverty, inadequate water supply, overcrowding, limited resources and funding, and underlying disease (Allegranzi et al., 2011; Raka, 2009; World Health Organization, 2011). The recent Ebola outbreak in West Africa has particularly focused attention on HAI prevention measures (World Health Organization, 2014).

HAI impacts on patient outcomes in a number of ways, including prolonged hospital stay, disability, reduced quality of life and, ultimately, death (Raza et al., 2004). Furthermore, if HAIs are transmitted out into the community, public perception of the quality of healthcare facilities may be negatively impacted (Raka, 2009). Of all types of HAI, surgical site infections have been shown to be the

most prevalent and well-studied in the developing world (Allegranzi et al., 2011).

Studies from Tanzania specifically are limited in number and scope. A study of surgical-site infections (SSI) at Kilimanjaro Christian Medical Centre showed that 19.4% of patients developed SSI, which is high compared with the rates in developed countries, but comparable to other African countries (Eriksen et al., 2003). In another single-day prevalence study a hospital-acquired infection rate of 14.8% was found in a tertiary referral hospital in northern

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Tanzania (Gosling et al., 2003). Fehr et al. (2006) identified an SSI rate of 24% in a district hospital in Tanzania, with particularly high rates of infections in organs or spaces within the body, separate from the site of incision, compared with other studies from Africa. However, the differing methods of data collection, settings, samples and types of surgery render direct comparison difficult.

To combat the international challenge of reducing infection rates, the World Health Organization (WHO) launched the First Global Patient Safety Challenge, 'Clean Care is Safer Care', in October 2005 (World Health Organization, 2009). The program emphasised the development of simple, cost-effective methods of tackling infection control designed to improve basic infection rates, irrespective of resources available or level of development of the host country (Pittet et al., 2008). The program centred on compliance with hand hygiene procedures as an important measure to combat infection, but also included procedures related to blood safety, sanitation and waste management safety, clinical procedure safety and infection safety (Pittet et al., 2008).

The key points contained within the WHO program of 2005, and more recently in 2014, were covered in modules presented in an Infection Prevention and Management Course (IPMC) developed by two clinical nurse specialists from the Global Health Alliance Western Australia (GHAWA) (a collaboration of the five universities of Western Australia [WA] and the WA Health Department) and delivered to Tanzanian health professionals in 2012. The innovative teaching techniques including role play and interactive learning tools used in the course have been described in this journal previously (Jones et al., 2014). The course aimed to provide simple risk assessment and reduction strategies to enhance quality improvement in infection control within the realities of the Tanzanian health system. Objectives included prioritising hand hygiene and the aseptic technique. The 4-day course was delivered three times in three weeks on a tertiary hospital campus in Dar es Salaam, and involved a group of 42 participants including medical doctors, nurses, midwives, nursing and midwifery educators, nursing assistants, pharmacy staff and laboratory staff. Participants came from six different healthcare sites including acute and community settings.

This paper discusses the results of a subsequent qualitative exploration of the influence on clinical practice of the knowledge obtained as a result of participation in the IPMC. Barriers and enablers to implementation of that knowledge were also explored.

Methods

Design, setting and sample

A qualitative, exploratory design using a semi-structured focus group was chosen for this study as it was felt this would allow participants to reveal personal experiences in

initiating change as well as learning from others' experiences. The focus group was held at the same tertiary hospital campus in Dar es Salaam that had hosted the IPMC, 12 months after the completion of the course. The focus group was facilitated by a female research officer from Curtin University with experience in qualitative data collection techniques. The research officer was not known to participants prior to the focus group being convened. Using a purposive sampling technique, all participants from the original course were invited to participate in the focus group via an information sheet sent to their workplace. From the potential recruitment pool of 42 multi-disciplinary health professionals, seven consented to participate (Table 1). Ethical approval was obtained from the Curtin University Human Research Ethics Committee. Participants signed a consent form and were informed they could withdraw from the study at any time without penalty.

Data analysis

The focus group discussion was audio-taped and transcribed verbatim. Thematic analysis was applied by one coder using NVivo10, a qualitative data analysis computer software package (QSR International, 2014). Analysis involved three stages of coding that moved from description of the data through ordering of categories to development of themes (Burns and Grove, 1997).

Definition of terms

Some specific terms relevant to infection control in the Tanzanian setting are defined below:

Jhpiego – an international, non-profit health organisation affiliated with The Johns Hopkins University that works to improve women's health in developing countries by providing training for healthcare professionals and strengthening healthcare systems.

The 5-S theory – this theory incorporates the five pillars of Sort, Set in Order, Shine, Standardize and Sustain and is designed to minimise waste and increase productivity through maintaining an orderly, structured, clean environment with clear operational guidelines ensuring a smooth and efficient workflow (Hirano, 1995). The Japan International Cooperation Agency (JICA) in collaboration with the Tanzanian Ministry of Health and Social Welfare have incrementally implemented the 5-S methodology since 2007.

Findings

Investigation of the focus group data revealed three themes which were Positive Change, Barriers to Change and Identification of Future Directions.

Table 1. Focus group participant characteristics.

Variable	Number
Gender	
Female	6
Male	1
Occupation	
Clinical Supervisor	1
Medical Officer (Doctor)	1
Clinical Officer	1
University Tutor	1
Registered Nurse/Midwife	1
Assistant Nursing Officer	1
Senior Nursing Officer	1

A Clinical Supervisor is contracted by a tertiary education provider to supervise students on clinical placements.

A Clinical Officer is trained in the medical model and is qualified to work within the scope of practice of general medicine.

Assistant Nursing Officer / Senior Nursing Officer: Registered nurses may have a range of titles dependent on their workplace. Generally, degree prepared RNs are referred to as 'Nursing Officers', with junior grades known as 'Assistant Nursing Officers', and the more experienced, having greater managerial responsibility, as 'Senior Nursing Officers'.

Positive Change

Within the first theme three subthemes were identified. These were: Education of staff, students and patients; Clinical practice change; and Improved awareness of existing systems.

Education of staff, students and patients

Participants revealed the module used in the IPMC on the WHO Five Moments of Hand Hygiene has now been incorporated for use in their nursing pre-registration education programs. Further, the novel pedagogical techniques utilised by the GHAWA educators were well received and have been adopted by lecturers in the programme. Subsequent to the IPMC, training on infection control techniques had been arranged at some sites as part of ongoing professional development of staff. Education had also been extended to patients on the wards, enhancing awareness of pathogens and methods of infection prevention.

'... and [the information we were given] on the 5 moments... I did some photocopies and I give to my colleagues, my fellow teachers. Some of them got to use them to facilitate some sessions.' (Participant 4, Tutor)

'We had this kind of role play which [name] showed us so I took that in and I teach to my students. And that helps to memorise that they have to follow all the five moments. So you can see they can learn in the class and they can transfer that into practice in their ward.' (Participant 4, Tutor)

'Even patients we conduct education in the room, how to use hand washing and how to use the hand sanitiser.' (Participant 3, Clinical Officer)

Clinical practice change

Participants reported the implementation of new standard operating procedures to improve the availability of hand sanitiser on ward rounds. Appropriate procedures for contaminated material and sharps safety had also been implemented.

'We try to put hand sanitiser on to the ward and the hand rub and we try to educate our subordinates because before that [before education] we just wash hand one time and then go to patient. During ward round we try to equip our trolley, we put hand sanitiser. When touching patient on ward round we infect our hands and we put SOPs – standard operating procedures – put in place to help others to know that.' (Participant 3, Clinical Officer)

'There are three bins for the main things like placenta, things like food... that is fine we are following it up nicely. And of course the use of the injection safety box, they use that.' (Participant 1, Clinical Supervisor)

Another positive practice change was in the area of workspace design and organisation. As recommended in the IPMC, the '5-S system' had been introduced in the wards of two hospitals, resulting in more efficient use of clinical time.

'I've noted in the different hospitals that I am going to I noted that in [name of hospital] they are running the 5-S system. In [name of hospital] in the labour ward they are doing that very well that is very effective.' (Participant 1, Clinical Supervisor)

'So we did that kind of arrangement you know [workflow], very good kind of arrangement for us in order to teach our students so that once you needed something you just go and take it that you can't waste a lot of time trying to figure out who has it. So we arrange that one.' (Participant 4, Tutor)

Improved awareness of existing structures

Following participation in the IPMC, participants had sought out sources of policy advice potentially underpinning infection control practice. For example, increased awareness of infection control quality committees was reported with a better understanding of their supposed purpose.

'After attending the infection control course, which I enjoyed very much, I thought well I want to go up and see what has happened in the hospital. And there I found that already they have existing kind of course run by Jhpiego. Yeah so mostly people there have got that kind of knowledge.' (Participant 1, Clinical Supervisor)

'I found that there was existing system which is what you call the quality improvement team, and I realise that some of the members have been trained in infection prevention.' (Participant 2, Medical Officer)

Barriers to practice change

Investigation of the data revealed two barriers to practice change, which were Staff attitudes and Lack of resources.

Staff attitudes

The most frequently reported barrier to practice change was the attitude of colleagues to what was perceived as an increased workload. The required frequency of hand hygiene was seen by staff at hospitals to be unreasonable and not feasible within the time available. A lack of knowledge was suggested as forming part of that barrier. Participants expressed further frustration in their attempts to emphasise the importance of maintaining a high standard of infection control in between inspections. Reluctance amongst colleagues to maintain good practice, let alone to change practice, despite having the appropriate knowledge was highlighted.

'People were wondering, "why all the time you touch patients you wash hands?" Some of my colleagues find that you are overworking because of that. The majority forget this [to wash hands]; I found that most of my colleagues after each person they are continuing practice without it' (Participant 2, Medical Officer)

'But I had the same problem, they say "it's too much to wash hand after before and after every procedure"' (Participant 5, Registered Nurse/Midwife)

'But they are not aware that infection prevention and control affects me, my patients and my colleagues... many people have doubted that.' (Participant 2, Medical Officer)

'So you say you know tomorrow people will be coming to look around to see how we are getting on. So they will just prepare for that, you know they have masks, they will be prepared for that. But the minute these people have come and gone they go back to their old procedure.' (Participant 1, Clinical Supervisor)

Lack of basic resources

An ongoing problem revealed by participants was a lack of basic resources such as a reliable water supply. A lack of

consumables such as antiseptic was also highlighted, along with a lack of educational resources such as reminder posters. However, efforts had been made in some hospitals to resolve these issues at a local level.

'And the leaflets... I lacked leaflets for teaching the people what to do, to read. I thought maybe we can put them somewhere to tell the patients where is somewhere to wash. I was really disappointed that they don't exist. To me it is very important.' (Participant 2, Medical Officer)

'I found in my room I have no water there. It's kind of not clean but I managed to make sure that the management made some modifications to get water. So I made all the changes to the rooms for other doctors.' (Participant 2, Medical Officer)

'They are going on well but the problem is that they sometimes ... they don't have materials such as antiseptics... they can't wash where they want....' (Participant 6, interpreted by Participant 2)

Identification of future directions as a result of IPMC

Persistence

Despite the difficulties encountered by the participants in initiating change within their organisations, there was a determination to persist with their endeavours. It was believed that in time change would come with continued education and garnering of management support. There were indications participants felt empowered by the knowledge gained in the course.

'Education, attitude; it was slow, we have to go teaching and teaching. Slowly by slowly they understand.' (Participant 3, Clinical Officer)

'You need to be in the forefront, determined. I mean this – "today I'm not going to work without this." You have to tell them [management]. If you don't request then nobody can see you have a problem. You say "I have a problem."' (Participant 2, Medical Officer)

Involving management staff in education courses

Some participants reported being encouraged by the management support they had received when approaches were made to implement changes for improved infection control.

'I think even in my management they are very interested to continue with that infection prevention and control. They help us, and if you want something for that process they are giving that.' (Participant 5, Registered Nurse/Midwife)

'So far the matron has agreed to help us change but we haven't affected it yet.' (Participant 1, Clinical Supervisor)

However, other participants suggested management did not have the required knowledge to support initiatives and new policy implementation around infection control. These claims were refuted by others in the group who felt managers would have received training early in their career, but did not prioritise infection control as an area worthy of investment.

'But by saying that in-charges have no idea I don't completely agree because these in-charges of the ward are registered nurses, and in each course they completed they must have been taught infection prevention and control. So they have the idea. Maybe it is because of their negligence and attitude.' (Participant 4, Tutor)

As a result it was considered critical by participants that management staff be included in any further education programmes to raise awareness of the benefits of infection control and improve the status of infection control to the levels where significant investments could be made.

'Because okay like we know we have attended a course and how useful it was, but then you find some departments and sections that haven't attended the course and they don't really see importance of this, but I think it would be very important to continue.' (Participant 1, Clinical Supervisor)

'She feels that it would be better if the "in charges" were to attend the course.' (Participant 6, interpreted by Participant 2)

Improved quality control

Aligned with the theme of staff apathy was the identified problem of a lack of commitment by staff to maintaining improvements. It was felt that spot checks without warning would motivate staff to maintain adequate standards and a tool designed for such a purpose was recommended.

'So maybe if we come up with a kind of assessment form or something which you can do abruptly. You know, you do it without them noticing that you are there, but you just go quickly into assessment.' (Participant 4, Tutor)

Discussion

A number of elements salient to the complex issue of infection control in developing countries are highlighted in the literature (Allegranzi et al., 2010; World Health Organization, 2009) and were reflected in our findings.

Staff attitudes

Participants in our study faced difficulties in convincing colleagues of the importance of increasing the frequency of hand hygiene practices. The prevailing hospital culture did not encourage a climate of personal safety. In developing countries this phenomenon has been associated with a lack

of hand sanitiser, sinks, reminders in the workplace, a lack of monitoring and overburdened staff (Ider et al., 2012; Jones et al., 2014). Further, the prevalence of infectious disease and subsequent health problems results in a focus on cure, rather than prevention, rendering it difficult for staff and management to accept the importance of infection control measures (Raza et al., 2004). In developed countries the benefits of infection control can be demonstrated through cost savings to the hospital. However, despite the correlation between workload and recurrent infections, in developing countries where the patients pay for the operational costs, linking cost savings with the benefits of infection control has limitations (Raza et al., 2004).

In the absence of economic motivation, other staff incentives are necessary. In a study of Ugandan hospital executives and staff, Bateganya et al. (2009) found rewards such as clear policies, additional resources, continuous professional education, better infrastructure and feedback on how standards could be met were perceived effective motivational tools for staff. Personal customised education sessions offering continuous education creating a culture of prevention have also shown to be effective (Lobo et al., 2010). Education programmes targeting infection control in developing countries have been successful in raising awareness and compliance with infection control procedures (de Gentile et al., 2001; Lobo et al., 2005; Raka, 2009).

Leadership

It is only possible to lower the HAI rate when infection control is accepted as a core corporate and individual responsibility by both the management and clinical staff facilitated by an infection control team (Bateganya et al., 2009; Griffiths et al., 2009; Sarma and Ahmed, 2010). A formal institutional programme with clear policies and clear definition of roles and responsibilities of individuals will raise the profile of infection control activities (Griffiths et al., 2009; Raza et al., 2004). Our focus group participants were surprised to find quality improvement teams that they had not known existed, indicating this area is a low priority. This is reflected elsewhere where leadership at policy and ward level is weak, and barriers through lack of funding, and low numbers of professionals trained in infection control result in ineffective committees that do not address infection issues (Ider et al., 2012; Raka, 2009). It has been suggested that quality assurance with accountability could be included in management contracts (Raza et al., 2004), however the lack of evidence to demonstrate the financial benefit of infection control may hinder this possibility.

Our findings have shown that a group of well-trained committed health professionals can be inspired to action and that this has potential to make changes at a number of levels of the system as part of a comprehensive infection control improvement programme. Most participants in the focus group had been able to initiate change at a level

commensurate with their position. For nursing staff, this was with the provision of education to patients, colleagues and ancillary staff. For clinical educators, this was in the modification of education programs for pre-registration nursing students. The medical doctor was more able to target his initiative at system level, advocating for an adequate water supply and demanding change with management.

The authors acknowledge that without spending observational time on the hospital wards it is difficult to determine whether there was any significant change in infection control practice. However, the IPMC produced some champions who are determined to persist with modelling good practice, and promoting infection control as a priority to colleagues and management (Raza et al., 2004). We posit that a tailored and continuing education program on infection control in Tanzania is warranted, but acknowledge that training and education is just one part of a multifaceted improvement programme. With the recent Ebola outbreak, education programmes on infection prevention and management and workflow assessment skills are needed to empower and keep communities alive, with lead agencies such as WHO acknowledging the need for experts to support and share knowledge. A course targeted at management representatives could be effective in helping infection control receive the attention it requires, and make influential decision-making support available to mandate change.

Recommendations

- Ongoing provision of the IPMC using observational and other knowledge gained from previous experience at those sites is essential. One such course was delivered in February 2014.
- Including managers in the education program is important, with the intention of formalising infection control as a managerial priority.

Limitations

Due to time constraints, only one focus group was able to be convened. It is acknowledged that this small sample may have affected the data saturation. Further, the intervention and subsequent focus group took place in a context of parallel improvement activity (Jhpiego activities, among other possibilities) that might impact on the findings presented here.

The focus group data were collected and analysed by one researcher, which it is acknowledged may represent a potential bias. However, the researcher was not involved in the development or delivery of the IPMC and as such was not seeking a pre-determined outcome.

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Declaration of conflicting interest

The authors declare that there is no conflict of interest.

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