University of KwaZulu Natal
Culture, Communication and Media Studies
Faculty of Humanities, Development and Social Sciences
Proposed Qualification for Project : BA Honours (60% project)

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Topic: Hands Free: the implementation of a hand hygiene campaign on the second floor restrooms of John Bews Hall (Residence), at Howard College, UKZN.

Number of words: 7,150

Declaration:

I declare that this research is the result of our own work, except where otherwise stated. I have given the full acknowledgement of the sources referred to in the text.

Date: 04 November 2010

Signature: ……

ACKNOWLEDGEMENTS

Thank you to the Centre of Communication, Media and Society studies for giving me this opportunity to be part of the department and guiding me through it all. Thank you to the department of Housing at the University of KwaZulu Natal, Howard College Campus for allowing me to implement an intervention at the John Bews Hall Residence. Thank you to the beautiful second floor ladies at John Bews Hall for participating in this intervention. Your energy and enthusiasm towards this project was very helpful in my research. Thank you to Steiner Hygiene for their involvement and supply of hand dispensers and hand wash and all the guidance towards proper hygiene. Thank you to Jutka Devenyi, my supervisor, your guidance and help was highly appreciated. Your patience and support was very helpful. Thank you to Phumelele Maveneni, the project's evaluator and monitor and to the fellow Media Honours students who helped in this project.

ABSTRACT

The aim of this research is to implement a hand hygiene intervention on the second floor of John Bews Hall Residence at Howard College. This takes into consideration the involvement of the residents; the new P Process approach of communication is used as a practical link that mediates the behavior change communication and Paulo Freire's notion of teaching, specifically dialogue and conscientisation. The later brings forth the notion of participatory communication which is used as the driving force in attempting to draw behavior change from the individuals participating in the research. Education-Entertainment plays a big role in addressing the orientation and assumptions of various theories and models that are associated with behavior change. To measure the success of the intervention, evaluation and monitoring is conducted by an independent researcher and this is to determine the factors that brought about change and documenting them, while at the time, it assesses the behavior change in residents and how it can be sustained.

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Introduction

This chapter puts forth the research question. It outlines the implementation of the "Hands Free" Intervention; a hand hygiene intervention on the second floor restrooms at John Bews Hall (residence) at Howard College. The aim of the hand hygiene intervention was to firstly, evaluate the knowledge and practice of hand hygiene among the second floor residents; secondly, to bring awareness and highlight the importance of hand hygiene to the residents; thirdly, to implement an intervention that would guide and help the residents to acquire new ways of proper hand hygiene practices; fourthly, to bring about behavior change among residents by using participatory communication and lastly to evaluate and monitor the practice of hand hygiene among residents as a way to help them acquire new ways of hand hygiene and maintain and sustain them. The hand hygiene practices, before and after the intervention, are therefore outline in this research.

The relevance of a Hand Hygiene Intervention at John Bews Hall Residence

For the past three years I have been a resident at John Bews Hall and it came to my attention that most residents did not practice proper hand hygiene. Residents did not wash their hands after using the restrooms or they would merely rinse their hands wish tap water and would not use soap after using the restrooms. The main reason that the resident stated for not practicing proper hand hygiene, was the fact that there was no hand wash (soap) in the restrooms hence it was easier for them to bypass this minor yet so important hygiene factor of washing hands. As part of this particular community, I took it upon myself to bring about change as the opportunity of this project arose hence this "Hands Free" intervention.

John Bews Hall residence is a three-storied, female residence that houses one hundred and eight ladies. It has two bathrooms on each floor with three restrooms and in all these restrooms, there are no hand wash dispensers or soap available for the residents. The residence has never (since its establishment) been awarded a cleanliness certificate by the housing department and it has been proven to have poor hand hygiene and cleanliness in the restrooms. The Housing department at Howard College stated the reason for the lack of soap in restrooms as insufficient funds but the residents. Among the campus residences,

John Bews Hall Residence is, ironically, known for housing confident, clean and good looking ladies therefore the implementation of a hand hygiene intervention was a way of aligning the values and beliefs of the residence's notoriety of beauty and cleanliness amongst the residents.

Hand hygiene as a fundamental aspect of everyday life

The World Health Organization (WHO), (2006), regards hand hygiene as an integral aspect of public health as it reduces the number of infectious diseases amongst people sharing a common place. Also, as individuals in our daily lives, we have learnt to maintain and sustain our health by acquiring habits and methods of hygiene, both physically and mentally. This therefore stipulates the importance of hand hygiene as it is recognised on a worldwide magnitude. Another organization that advocates the importance of hand hygiene is the Centers for Disease Control (CDC), which stipulates hand washing as the simplest, most effective measure for preventing the spread of bacteria, pathogens and viruses (2002). However, even with this knowledge, most people still do not wash their hands after using the restrooms and before and after eating. CDC (2002) insists that most food-borne illnesses start in the restrooms and these diseases are transferred through bacteria carried out mainly by hands. Numerous studies support the findings that hand washing reduces both the carriage of pathogens on the hands and nosocomial infections.

The "Hands Free" intervention is therefore a response and 'ally' to these studies that encourage proper hand hygiene. A recent study conducted in South Africa, has investigated the importance given by population to the simple action of washing hands regularly.[1] The statistics showed that 45% of South Africans underestimate the benefits hand-washing and do not consider it to be the easiest method of keeping bacteria and diseases away. Moreover, 10% of the people in the survey admitted that they do not wash their hands after visiting the restrooms. The findings of this survey highlight the need for a hand hygiene intervention to be run at a South African institution.

The Intervention Process

[1] www.health24.com/news (accessed 14 September 2010)

The “Hands Free” intervention seeks to investigate the knowledge, level and practice of hand hygiene amongst John Bews Hall residents and hence build upon that practice (or rather lack of) as a way to influence behavior change in the residents. With knowledge comes action hence a participatory communication method of implementation will be used as a way to draw behavioral changes from participants (residents) themselves. This will be done through a Freiren approach (1972) of learning and development whereby the concept of dialogue is used as an exchange between people who enjoy and strive for an equal relation of power with one another. This implies that the residents themselves will draw on the problem and seek a solution; behavioral change will come from within the resident affected by this matter. Therefore I will mainly facilitate the process instead of ‘injecting’ ideas or solutions into the residents; they will be their own change agencies.

Models of behavior change will also be used as guidelines in this intervention as it aligns itself with health communication programs. These are namely: (i)The health belief model (HBM) (Becker 1974) which predicts individual response to, and utilization of, screening and other preventive health services by assuming a ‘rational; decision-maker. The theory of reasoned action (Fishbein & Ajzen 1975) which predicts individual behavior by examining attitudes, beliefs, behavioral intentions and observed expressed acts. Also, the design, implementation, monitoring and evaluation of this intervention will follow Piotrow (et al, 1997)‘s model known as “The Processes and Principles for Health Communication Projects which was later revised as The new P Process. The new P Process (in which the P can stand for project or program) is valuable because it composes of all the key elements needed in initiating, implementing and evaluating a project. In the P Process, the following steps are taken; analysis, strategic design, development, pretesting and revision and production. This is then followed by management, implementation and monitoring then impact evaluation which lead to planning for continuity where participants and the environment adjust to changing conditions and plan for continuity and self-sufficiency.

In a nut shell, the “Hands Free” intervention aims to connect the residents of the second floor of John Bews Hall with proper hand hygiene practices and aim to answer the following questions:

- How knowledgeable are residents about the importance of hand hygiene in their restrooms specifically?
- What form of participatory intervention can be created for this public health message on hand hygiene?
- Are residents willing to acquire 'new' ways and behavior change towards hand hygiene?
- Are residents willing to sustain and maintain hand hygiene practices?

The conduct of this intervention will follow methods suggested by the above mentioned theorists to attempt to bring about success in the project. As a facilitator in this project, I will buy and put hand dispensers and hand soap in the bathrooms on the second floor of the residence for a period of two to three weeks. With the participation of the residents, we will make posters with slogans and pictures that we will poster in the restrooms. Talks and interaction, inside and outside the restrooms, will take place where we will continuously engage in the importance of proper hand hygiene. Lastly, an evaluation and monitoring of this intervention will be conducted by an independent researcher to weigh the success of the project.

Literature Review

This literature review explores literature from a variety of sources that relate to the theme of the research. It outlines hand hygiene interventions and methods of the intervention process and encapsulates the strategies of intervention that participants acquire and practice as a way to drive the intervention. It focuses on the Behavior Change communication and how they are applied to the participants in the "Hands Free" intervention. Among these behavior change communication is Education Entertainment (EE) which is mainly used to implement the intervention as it brings fun and entertainment to the participants while at the same time, they get to learn about proper hand hygiene practices.

Behavior Change communication

In public health, communication has been used a vital key to bringing about change in any community. Problems are always solved through individual or social approaches hence the behavior change communication and social change communication respectively. Behavior change communication has been proven to be very effective in responding to challenges of minor problems while the social change communication approach is more effective with challenges of a pandemic (Cardey,2006:1). According to Deane (2002), Behavior Change Communication is, "result oriented, science based, project oriented, client-centered, cost effective, based on a belief that urgency of the epidemic necessitates a high degree of focus on behavior, tries to encourage people to make informed choices". Therefore one (the facilitator or the agent of change) must take into consideration the scale of the challenge- whether it is an epidemic or a less dangerous challenge to public health. Hand hygiene is considered a vital aspect to public health as it is one the most simple but effective ways of reducing infectious diseases amongst people sharing a common place (WHO, 2006).

Behavior change communication has mainly being used in HIV/AIDS communication and it is approached through the theoretical and conceptual foundation. This entails the theories namely: the Social learning theory (Bandura 1997) which postulates that an individual behavior is the result of the interaction among cognition, behavior, environment and physiology. This theory focuses mainly on bringing about change on the individual instead of focusing on a society at large. To achieve this, it has programs that imitate the behavior of a role model-modeling and self-efficacy where one's perception of one's ability to adopt a recommended behavior is addressed. This is needed in this intervention as the behavior towards practicing proper hand hygiene is targeted towards the residents on an individual level. Theory of reasoned action (Fishbein & Ajzen 1975) predicts the individual behavior by examining attitudes, beliefs, and behavioral intentions and observed expressed acts. There is a linear progression from attitudes to action, and a given behavior is determined by an individual's intention. This applies to the "Hands Free" intervention mainly in the pre-intervention phase where hand wash dispensers have not yet been installed in the restrooms but residents are expected to use their own hand wash or soap.

The "Hands Free" intervention is brought into the residence by me as a researcher, a facilitator and resident of the John Bews Hall. This implies the Diffusion of Innovations theory (Rogers 1983) which focuses on the communication process by which a new idea or product becomes known and used by people in a given population. Diffusion of Innovations has been criticized for being too linear, for having a pro-innovation bias and for widening the gaps between the 'information haves' and 'have-nots' in a social system. The health belief model (HBM) (Becker 1974) predicts individual response to, and utilization of, screening and other preventive health services by assuming a rational decision-maker. HBM advocates that the response and utilization of disease prevention programs will be predicted on an individual's perception of the seriousness of the disease, severity of the disease, perceived benefit of services, and barriers to accessing such services.

Through the intervention, the above mentioned theories will be used as guidelines in the implementation of "Hands Free" and residents' attitudes and behaviors will accordingly be considered. Also, orientation and assumptions are associated with the prevailing

approaches of the theories. Cardey (2006:04) outlines these as follows;

> The focus is on individual needs and behavior change. There is a linear progression from knowledge to attitudes to behavior to practice. Modeling (imitation of behavior of a role model) and self-efficacy (one's perceived ability to adopt a recommended behavior) are used. There are assumptions that exposure to information leads to knowledge, attitudes, trial, and adoption of the desired behavior. Assumptions that people are rational and make systematic use of information available to them are made. These theories assume that people consider the implications of their actions before they decide whether or not to engage on certain behaviors and that people are passive adopters of information, injecting new messages into society without critical interrogation.

The intervention Process and Entertainment Education (EE)

For any intervention to be implemented, it must undergo three main stages: the Pre-intervention, the Intervention process and the Post-intervention. The pre-intervention is aimed at organizing everything that is involved in the intervention including the survey and evaluation of the problem. The intervention process includes putting up poster and installing the dispenser in this study. The post-intervention includes the evaluation and late focus groups. The new P Process respectively outlines this process of intervention.

"Enter-Educate is a strategic process to design and implement a communication form with both entertainment and education elements to enhance and facilitate social change" (Coleman, 1999:76). EE is mainly encompassed by marketing, persuasive communication, play and social learning/self-efficacy as these concepts work hand in hand to bring about effective communication. EE is used mainly in Television programs that advocate education and illustrate it in an entertaining manner as a tool to pass the educational message to the target audience. Coleman argues that the EE approach promotes healthy choices, practices and lifestyles because it is pervasive, popular, personal, participatory, passionate, persuasive, practical, profitable and proven effective (1999: 78).

Participatory communication plays a big role in interventions as it gives the participants a sense of ownership and in return trust and commitment toward the project. Entertainment includes drama, song, dances, paintings and stories that give participants a sense of relation to their characters or ideas expressed in the entertainment. It bring about persuasion behaviors are illustrated and the participants can "see for themselves the consequences of unwise behavior" (Coleman, 1999:78). Thomas Tufte (2003: 14) outlines the edutainment model and how it is used as a form of communication and follows the following step; (1) Research and planning: this is the topic involving target audience and other stakeholders. (2) Development of the narrative: this involved message design, integration of message onto chosen form of entertainment, pre-testing with the target audience and other role-players. Finally it involves modification as a result of pre-testing. (3) Production. (4) Implementation and Promotion: this includes promoting, popularizing and getting the most out of the edutainment during implementation. Thus, large parts of the advocacy takes place at this stage. (5) Evaluation: the communication initiative is evaluated on as ongoing basis, and each final evaluation serves as input into the next campaign.

Theoretical Framework

As previously mentioned, my research focuses on having a hand hygiene intervention at John Bews Hall Residence and focuses on bringing about behavior change amongst residents. This chapter will attempt to formulate a link between theories of Paulo Freire, participatory communication and how it could be filtered into the world of behavior change and intervention strategies. By exploring the following theories, I will provide a basic progressive platform that could be adapted to the intervention process. Paulo Freire's Theory of Dialogue derived in 1970, addresses the aspects involved in participatory communication as a form of development- in this case, public health development. The new Processes and Principles for Health Communication Projects (The new P Process) revised by Piotrow (et al 1977) will be used as a link that mediated Freirean approach of dialogue with the participatory communication that builds upon the behavior change communication to bring about change in the residents.

Paulo Freire and Participatory Communication

The Brazilian educationalist, Paulo Freire's theory of teaching emphasize that the essence of dialogue is the word. "But the word is more than just an instrument that makes dialogue possible; accordingly, we must seek it constitutive elements. Within the word, we find two dimensions, reflection and action" (Freire, 1970:44). Freire further argued that people need to understand and participate in teachings in order for them to implement any change for development. When people understand the word- what is said and illustrated- the word will be converted into activism. In the case of the "Hands Free" intervention, the word was the reasoning behind the importance of hand hygiene and the practices that follow. Residents must first acknowledge what hand hygiene and its benefits are for them to attempt to change their behaviors.

Freire emphasizes the notion of dialogue which is “the encounter between men, mediated by the world, in order to name the world” (Freire, 1970: 45). This means that those involved in dialogue literally make meaning and sense of the world around them and the challenges they are tackling. Freire believes that dialogue imposes itself as the way by which they achieve significance as human beings because people-be it students or participants- need to own their position and achievements by the changes they bring about. This is highly effective on a participatory communication level instead of a top-down level where an ‘educator’ injects ideas into another. “This dialogue cannot be reduced to the act of “depositing” ideas in another, nor can it become a simple exchange of ideas to be “consumed” by the discussants (Freire, 1970: 45). Dialogue and praxis- action that is informed and linked to certain values, struck a strong chord with those concerned with popular and informal education. His participatory approach supports a horizontal mode or flow of information as oppose to a top -down or vertical approach (Freire, 1970: 46).

“Hands Free” intervention used dialogue among residents to create an intervention that would be effective and meaningful to them and those around them therefore a top-down approach of communication was avoided and a more participatory approach was used. Residents made posters that illustrated the knowledge (bacteria and diseases caused by improper hand hygiene) and practices as a form of dialogue. It was an act of creation which did not serve as a crafty instrument for the domination of one person by another (Freire, 1970: 45). The facilitator’s involvement was simple that- to facilitate therefore Freire’s notion that true dialogue can only exist if the “dialoguers engage in critical thinking that discerns an indivisible solidarity between the world and the people and admits no dichotomy between them-thinking that perceives reality as a process, as a transformation rather than as a static entity” was achieved (Freire, 1970:46).

Friere argues that “without dialogue there is no communication and without communication there cannot be true education” (1970:47). The methods of intervention used in the “Hands Free” intervention advocated for dialogue amongst residents before,

during and after the intervention as a way to implement the notion of participatory communication and behavior change communication:

> The notion of *Participatory Communication* stresses the importance of *cultural identity* of local communities, and of *democratization* and *participation* at all *levels*-international, national, local and individual…in order to share information, knowledge, trust and commitment in development projects, participation is important in any decision making process for development" (Servaes,1996:75)

To achieve a maximum participation amongst the residents, two focus group discussions that fuelled the intervention aimed at having residents initiate ways of implementing the intervention. Here, the residents themselves came up with the slogan- 'clean hands are happy hands'. Participatory was at all levels to even having some of the participants watch as the hand wash dispensers were being installed. The residents' participation was more like them owning the intervention as they own work. There was a reciprocal collaboration throughout all levels of participation and listening to what others said, respecting the counterpart's attitude and having mutual trust as needed (Servaes, 1996: 75).

Another important theme flowing throughout Freire's work was the emphasis on critical conscientization- "developing consciousness, but consciousness that is understood to have the power to transform reality" (Taylor, 1993: 52). This notion also supports the creation of knowledge via the process of invention and re-invention/action and reflection. These are incorporated in the artistic creations and ongoing slogans which are part and parcel of the daily practices of the residents on the second floor of John Bews Hall. It is important to acknowledge that Freire has his critics, however I will not be focusing on the critics of Freire's notion of dialogue.

The new P Process

The new P process (Piotrow, et al 1977) works as a link between theories of Paulo Freire and Behavior Change Communication. The new P Process (illustrated in Figure 1) is part of a strategic communication: combines a series of elements including research, stakeholders participation, creativity, high quality programming to stimulate positive and measurable behavioral change amongst an identified target audience and to promote the uptake of services.

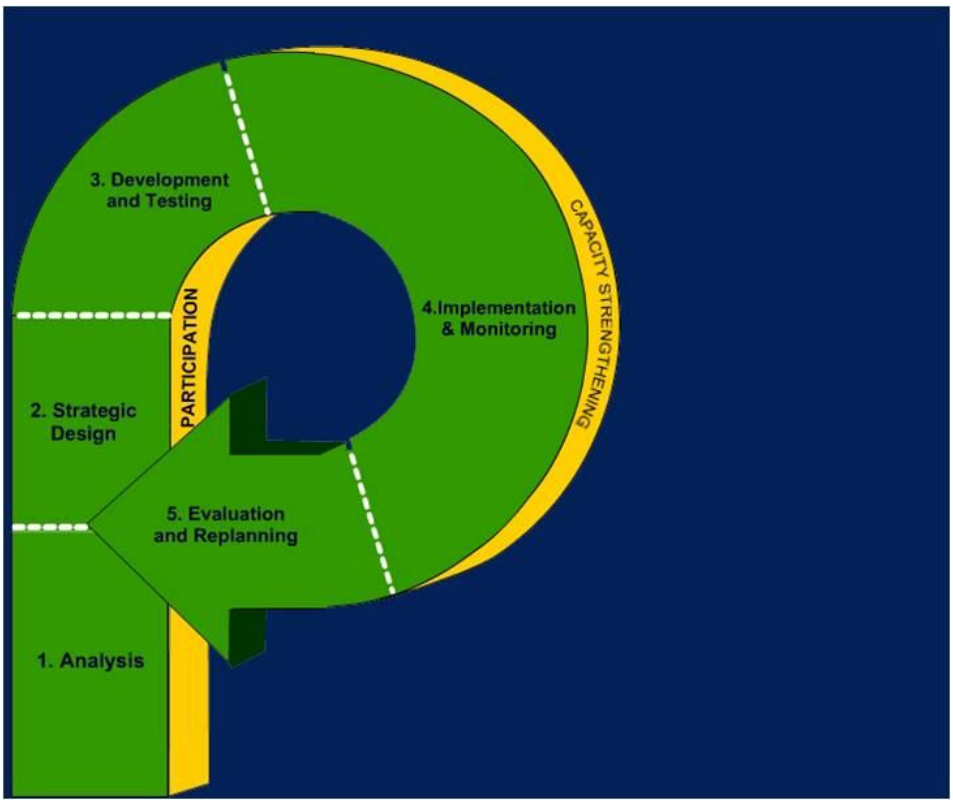

Figure1: the new P Process (Piotrow, et al 1977)

The P process (in which the P can stand for project or program) is valuable as it composes all the elements needed in initiating, implementing and evaluating a project. The P process is "firstly, systematic and rational, secondly, it is continually responsive to research findings and data, thirdly, it is practical for field applications at all levels and lastly, it is strategic in setting and pursuing long-term objectives" (Piotrow et al, 1997: 27).

According to Piotrow et al (1997), the following six steps can be followed in sequence to develop and implement effective national communication strategies: (1)

Analysis: this is where situation analysis, program analysis/needs assessment and audience/behavioral analysis occur. The implementers of the program have to listening to potential audience, assessing existing programs, policies, resources, strengths and weaknesses and analyzing communication resources. The "Hands Free" intervention went through this step by investigating and questioning the housing department about the absence of hand wash in the restrooms. The residents were questioned if they regarded the absence of hand wash as a problem through a pre-intervention survey. (2)Strategic design: constituted the objectives, identifies audience segments, positions the concept for the audience, clarifies behavior change model, selects channels of communication, plans for interpersonal discussions, draws up an action plan and designs the evaluation. "Hands Free" intervention took this step by drawing up ways in which the intervention would be done- the use of posters, a slogan and installation of the hand wash dispensers.

Step (3) is the development, pretesting and revision and production: this step works to develop message concepts, pretest with audience members and gatekeepers, revise and produce messages and materials, retest new and existing material. Residents participated in this step by paying attention to television adverts of hand hygiene, being advices to take their personal soap into the restrooms and wash their hands on a regular basis. The intervention process and its objectives were discussed with the housing department and the gatekeepers who very enthusiastic about this project gave a go-ahead. Step (4) Implementation and monitoring: in this step, there is a mobilizing key organizations, creating a positive organizational climate, implement the action and monitor the process of dissemination, transmission, and reception of program outputs. The "Hands Free" intervention installed hand wash dispensers through the help of a professional hygiene company (Steiner Hygiene) and an independent researcher (Phumelele Maveneni) was part of the project by evaluating and monitoring it.

Step (5) involves evaluating and replanning: this is where the impact on audiences or participants is measured and the participants determine how to improve future projects. There is planning for continuity where participants adjust to changing conditions and plan for continuity and self-sufficiency. For further planning of hand hygiene at John Bews Hall, some residents have taken it upon themselves to campaign for the installation of hand wash

dispensers and raise money or contribute as the housing department mentioned lack of finances as the main obstacle. A report by the researcher, who did the evaluation and monitoring, will be given to the housing department to influence a way forward. It is important to note that throughout the three initial steps of the P Process, participation occurs amongst residents and during the last two steps, there is capacity strengthening as ways of implementing, evaluating and improving the projects are taken into consideration.

Steps to Behavior Change (SBC)

Piotrow et al, argue that the SBC is an adaptation of diffusion of innovations theory and the input/output persuasion model that is enriched by the social marketing experience and flexible enough to use other theories within each of the steps or stages as appropriate (1997: 21). SBC shows how individuals progress from knowledge to sustained behavior and advocacy and emphasizes that "behavior change- and thus communication intended to influence behavior-is a process" (Piotrow et al, 1997: 23) and SBC has five steps towards behavior change: knowledge, approval, intention, practice and advocacy. SBC acknowledges that not all individuals go through each step of the process in the same order at the same speed and at the same time. This was a case with the "Hands Free" intervention as it took longer for some residents to acquire hand hygiene methods while others had mastered the task in the beginning. The SBC framework and the new P Process work as mediators that link behavior change communication with the intervention process.

Methodology

In this chapter, the study describes the strata of John Bews Hall residence forming the study's sample. The sample is described as it was selected with reference to the strata of the target population. Selection of random residents, current members and previous members of the John Bews House Committee who were selected to be participants taking part in the study is also discussed. Methodology is the way in which the researcher plans and structures the research process. That is, it acts as a guide enabling the study to be conducted in the right way; it is the science of finding out (Babbie, 1998). This research study is of a qualitative nature where the main interest of the researcher is to find out '**why**' and '**how**' as a way to intervene, evaluate and eventually recommend ways in which hand hygiene can be practiced and sustained by residents on the second floor of John Bew Hall Residence at Howard College. Qualitative research is used to gain insight into people's attitudes, behaviors, value systems, concerns, motivations, aspirations, culture or lifestyles[2]. The reasoning behind drawing on a qualitative research is a small sample group of residents of the second floor at John Bews Hall at Howard College.

Method

The beginning point in intervention was conducting a survey on the residents of the second floor on their practices and habits of hand hygiene. This survey would then determine if there is a problem at all with hand hygiene practices amongst residents. Two questionnaires were handed out to the all the twenty seven residents on the second floor. The first questionnaire consisted of both closed and open-ended questions. The aim was to get a general insight about their knowledge on hand hygiene and their habits and practices of hand hygiene. This was part of the first step of the intervention; the Pre-intervention. This was followed by a focus groups discussion as a way to get detailed information on the behaviors and practices of hand hygiene and find out the core reasons why residents do not wash their hands after using the restrooms. The hand wash dispensers were installed a week after this focus group and during this time, I wanted to evaluate the behavior of the residents, i.e. if they would use their own soap to wash their hand and if they would wash

[2] http://www.qsrinternational.com/what-is-qualitative-research.aspx

them in the proper six-step method.

The intervention process advocated participatory communication therefore this required the residents to participate in implementing the intervention. Residents had a brainstorming session that brought forth ideas for things to be done in the intervention. The installation was already in line for steps to be followed so the residents focused on the Education-Entertainment strategies. They created posters with images of what hand hygiene stipulates and outlined steps to be followed when washing hands and created a slogan to be constantly said as residents exit the restrooms.

The second questionnaire which dealt with both closed and open-ended questions helped was aimed at gaining insight into two different groups of participants (Fink, 1995:117): Members who had participated in the first focus groups and those who had not. This would work towards the evaluation of the effectiveness of the posters and the installation of the hand wash dispenser. A second focus group was conducted and the aim of this one was to evaluate the behavior changes (if any) of the residents towards hand hygiene. It focused on the changes that had occurred pre-intervention, during the intervention and post-intervention. Both questionnaires are included in the appendix.

During the intervention, a hand hygiene quiz was conducted among residents to test their knowledge and behavior change and the top scorers were awarded. This was done as an indicator to determine whether the hands hygiene habits that were discussed in the first focus group were learnt and if they were practiced. Another indicator was the level of hand wash in the dispensers; I could monitor and check the amount of hand wash that was used on a daily basis.

Sampling.

Bryman et al, (1997) states that if a survey investigation is being undertaken, the researcher must find a relevant sample to whom the research instrument that has been devised should be administered. They continue to show that the fact of random selection (in this case

simple random sampling) is important because it reflects a commitment to the production of finding that can be generalized beyond the confines of those who participate in a study. Although it is rarely impossible to contact all units in a population, in order to generalize to a wider population, a representative sample will therefore be required. For the "Hands Free" intervention, all residents on the second floor were chosen to participate in the study. Before the commencement of the study, the residents signed consent form that allowed outlined the ethical measures taken in this study and this was also the participants' way getting involved with the study. All members of the second floor participated in filling in the questionnaires while for the focus groups, a random selection was done which amongst the participants consisted of two house committee members and the second floor representative.

Data analysis.

Data analysis involves the process of transforming the raw data into information that will answer the original research question. Content analysis was made as a way to analyze data and this means that the context of the data was evaluated and analyzed in a way that would answer the proposed questions. The data was mainly from the focus groups and the questionnaires that residents filled in.

Reliability.

A reliable survey instrument is the one that gets consistent results (Fink, 2003). This is the quality of measurement method that suggests that the same data would have been collected each time in repeated observations of the same phenomenon (Babbie, 1999). In the case of this study, data was collected using the same instrument (focus groups and questionaires) with the residents of the second floor of John Bews Hall being the participants.

Validity

A valid survey instrument is the one that obtains accurate results (Fink, 2003). It describes a measure that accurately reflects the concept it is intended to measure (Babbie, 1999). Therefore, the study will be valid due to the fact that it will show exactly what it intends to measure, which is to investigate the knowledge and practice of hand hygiene among the

residents of the second floor of John Bews Hall before, during and after the intervention.

Ethical Issues:

Permission to conduct the study

The study takes into consideration the ethics therefore it is vital to have the housing department's consent before administering the intervention.

Respect of human dignity

It is important to make the participants aware of the fact that the questionnaires are voluntary. They are entitled to anonymity and they can choose to withdraw at any time during the research without any negative consequences and they will not be expected to explain or justify their reason for withdrawal.

Privacy, confidentiality and anonymity

Before administering the questionnaires, the researcher clarified procedural matters related to the participants' confidentiality and anonymity. It was also explained that their privacy and sensitivity will be protected, especially in the reporting process of the research project.

Principle of beneficence

The participants were informed that although they would not immediately benefit materially from the study, but the study will be beneficial as it is intended to improve their hand hygiene practices and knowledge.

Written consent

Full information regarding the purpose of the study was given to the housing department and the participants. This was done in the language best understood by the participants. The significance and data collection procedures were explained and participants' suggestions and questions were considered and answered.

Limitations and constraints.

The main constrain in this study was time. The intervention was run for a period of three to

four weeks; in the first two weeks, participants were encouraged to practice proper hand hygiene using their own soap as soap was not provided. The following weeks, hand wash was available in the restrooms as dispensers had been involved. The dispensers were installed a week late because the company installing them (Steiner Hygiene), delayed as they had to process the office procedures which took longer than usual due to unavoidable reasons. The organization for the focus group meeting took longer due to the availability of participants as it was close to the examination study period of residents who are currently students.

Data analysis and Discussion

Data analysis involves the process of transforming the raw data into information that will answer the original research question. In this chapter, the data generated in this study is analyzed in terms of themes and in relation to the broader themes of the research mainly it included the residents' behavior change towards hand hygiene.

Knowledge hand hygiene by participants:

Before assessing the participants' practices of hand hygiene, it was important to find out their knowledge and habits towards hand hygiene hence a survey was conducted as to determine if there is a problem and its severity. Approximately fifty percent of the survey population did not practice hand hygiene. About seventy five percent of the population study admitted to washing their hands after using the restrooms but they did not use soap due to its absence in the restrooms. Most participants were informed on the knowledge of hand hygiene and the diseases one can get from lack of hand hygiene. a large percentage of them admitted that although they had all the knowledge about hygiene, they did not think of it as an integral part of their health.

"I know I have to wash my hands before I eat and after, and after using the toilet but I don't always wash them because it's not like I'm going to die if I don't. It's one of those things you have to do but you don't really do it because you can get away with it" (Participant A, first focus group)

When asked about the amount of time they take to wash their hand, most of them admitted to about five seconds and were shocked at the required time of fifteen seconds. They also did not know of the proper six-step hand wash procedure. Finally, the residents explained that they main reason for their ignorance with hand hygiene was the lack of hand wash in the restrooms.

"I leave the toilet and rinse off my hands with soap but I don't consider washing them when I get to my room because I get distracted and end up doing other things" (Participant B, first focus group)

The second focus group questions focused on the behavior changes of the residents. All of them admitted that they had been washing their hands in the proper manner at most times. This, they say, was influenced by seeing the posters in the restrooms and having the hand wash in the restrooms.

"I could relate to the posters and I remembering the time when we made them and what we were saying: remember the clean hands are happy hands thing? You know the fact that we even wanted to make a song out of it all was so crazy. So whenever I saw the posters I'd remember" (Participant C, second focus group)

Strengths of the "Hands Free" Intervention

The fact that the dispensers were installed by a professional company that worked with hygiene, gave the impression of the gravity of the intervention and its objectives. The process was build upon the participants' ideas; the slogan for the intervention was created by them and the posters were created by them, even given names regarding the residents who were involved in drawings on the poster. The fact that the facilitator was a member of this population made it easy for the participants to trust and believe in the intentions of the intervention. This allowed for residents to voice out their concerns without any intimidation of an 'outsider who has brought their own ideas'.

Weaknesses of the "Hands Free" intervention

According to the researcher who conducted the evaluation and monitoring, having more posters even on the corridor walls would have brought forth much change. The delay of the soap dispensers also brought delay to the intervention.

Recommendations

At the beginning of this project, the housing department was enthusiastic about it and they said they are open to suggestions of how the intervention could help and have a doable way

forward. Also, Steiner Hygiene was impressed to have been approached a resident who wanted to bring change in the hygiene behaviors of her surrounding and offered to have a trial period in all the residence as a way to show that residents the longing of dispensers in the restrooms by residents. With this trial, which can take two weeks to a month, students are encouraged to participate and voice out their concerns about hygiene and come up with solutions of a way forward.

Residents on the floor have taken it this hand hygiene matter and the lack of soap dispenser to the John Bews house committee which will be in the agenda for the following year's projects. The second focus group of the intervention saw residents volunteering and choosing a hand hygiene ambassador who would push the campaign in the following year. Residents went to the extent of suggesting financial contributions amongst themselves and fund-raisings campaigns that would finance the installments of soap dispensers in the restrooms.

Conclusion

Since John Bews Hall was proven to lack cleanliness and proper hand hygiene practices, this intervention was a response to this public health concern. Finding out the extent of the residents' knowledge on the importance of hand hygiene was one of the main objectives of this intervention. This was achieved through a survey that showed the amount of knowledge the residents have and their habits towards hand hygiene. It was important to research, before the intervention, if the residents believed there was a problem of hand hygiene in the residence then take into consideration their opinions about this matter. To achieve the objectives of the intervention, a form of participatory intervention had to be created for this public health message of hand hygiene and this was done by involving the participants in the creation and methods that were taken to put it into action. This proved to be vital as it brought ease and ownership of the intervention to the residents hence they could participate at all levels of the intervention.

Paulo Freire's notion of dialogue as a form of communication to encourage development was one of the theories practiced in bringing about change in the behaviors of the residents. Behavior change communication was another vital aspect that induced a trustworthy environment that allowed the residents to participate in the intervention. The new Process linked the two theories together by bringing in infusing them into practicalities that made sense to both the implanters of the intervention and the residents involved. At the end of it all, monitoring and evaluation that was conducted on the "Hands Free" Intervention, by an external researcher, assessed that the intervention was effective mostly because participatory measures were taken into account in the process of influencing change in the residence. The willingness of the residents to maintain and sustain proper hand hygiene practices, also added to the success of the intervention.

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