TAITA TAVETA UNIVERSITY

BACHELOR OF SCIENCE IN STATISTICS

RESEARCH PROPOSAL

STUDENTS SATISFACTION WITH SERVICES OFFERED AT TAITA TAVETA UNIVERSITY HEALTH UNIT.

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A RESERCH PROPOSAL SUBMITED TO TAITA TAVETA UNIVERSITY, SCHOOL OF SOCIAL SCIENCE AND INFORMATICS, IN PARTIAL FULFILMENT OF THE REQUIREMENT FOR AWARD OF THE DEGREE IN BACHELOR OF SCIENCE IN STATISTICS

DECLARATION

This proposal is our original work and has not been shared or presented for the award of degree in any other academic institution. Any similarity is just a coincidence.

KEVIN BOSIRE	TU01-SS213-0598/2015		
NAME	***REG.NO***	***SIGN***	***DATE***
		……..	……..

Declaration by supervisors

This research has been submitted for defense with our approval;

Signed by……. Date…….

DR. KOMBO

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Dedication

This proposal is dedicated to our classmates, families, friends and Taita Taveta University.

ABSTRACT

Patient satisfaction is a topic that is important both to the medical health care providers, the patients and the stake holders in the medical care industry. The medical health care providers ensure that the patients satisfaction is achieved by providing the best ways of serving the patients according to their needs.

On the education sector student satisfaction to the health care provision is one of the most important basic factors towards the student wellbeing and academic excellence in learning institutions. Student's satisfaction survey can provide valuable information for evaluating the current status, awareness of quality of services offered and to provide information to the policy makers for the improvement of services offered.

The research focuses on the student satisfaction to the health services provision from Taita Taveta University Health unit. This domain is of interest as it concerns the activity closely linked to the school prosperity. The aim of this project is to find out how the physical environment, technical quality, interpersonal relations and accessibility of the healthcare affects student's satisfaction in one way or another.

The research focuses on the primary data collected from the students which will be used to study the phenomenon. Data collection was done using structured questionnaires which was presented to the sampled students who freely answered the questions which were aligned with the study objective. A 5-point Likert scale was used in some of the questionnaire items to examine student satisfaction with identified health care services provided by Taita Taveta University.

After collection of data concerning student's satisfaction data was analyzed using statistical methods namely: regression, chi-square statistics using statistical analysis software (R-software, SPSS).

Contents

1.0 CHAPTER ONE

1.1.0 INTRODUCTION

1.1.1 BACKGROUND

Patient satisfaction is a measure of the extent to which a patient is pleased with the health care which they received from their health care provider in evaluations of health care quality. It is a performance indicator measured in a self-report study and a specific type of customer satisfaction metric.

Patient satisfaction is a crucial and commonly used indicator for measuring the standards in health care. It affects clinical outcomes and patient retention. It also affects the timely and efficient delivery of quality health care to the patients. Patient satisfaction is therefore a proxy however an awfully effective indicator to measure the success of a health facility. It denotes the extent to which general health care needs of patients are met. The most important reason to conduct patient satisfaction survey is that they provide the ability to identify and resolve potential problems before they become serious.

Some of the scholars who have done research on patient satisfaction defined satisfaction as follows:

Susie (1982) in her review of patient satisfaction defined patient satisfaction as positive evaluations on distinct dimensions throughout the illness episode, a particular health setting plan, or the health care system in general. She suggested that satisfaction must be understood within the context in which a variety of elements may be more or less satisfying to the patient.

Fitzpatrick, et al (1983) explained satisfaction as an expression of the gap between the expected and perceived characteristics of the service. He considered satisfaction as a phenomenon that could be elicited by asking simply how satisfied or not patients maybe about the service.

Carr-Hill (1992) demonstrated that patient satisfaction is chiefly determined by at most six dimension namely medical care and information, food and physical facilities, non-tangible environment, food quantity, nursing care and visiting program.

According to Rao et al (2006) patients may be dissatisfied with health care which improves their health or satisfied with health care which does not, there are circumstances in which patient satisfaction is not a valid indicator of health care quality even though it is mostly used as such.

Also in the United States of America, patients who were operated in various hospitals reported that they were highly satisfied with the quality of surgical procedures they underwent. The implication of this is that it does not imply that there is decrease and increase between high patient satisfaction and quality patient care in favor of another (Tsai, 2015).

Patients' satisfaction is a concept that has received great attention today in health care and it is one of the main goals and priorities of the health and treatment system. Health facilities are mandated to provide good and high quality services for each individual. Satisfaction of patients is considered one important outcome of health care and it is directly related with utilization of health resources effectively.

Health status of individuals is a basic need that represents the overall productivity of people. The idea of satisfaction is fundamental to the delivery of services in each

and every other sector of the institution. Such services are aimed to increase consumer satisfaction and improve the confidence of the consumer. According to Dornan (1988) he stated that health consumer altitude, service providers and patient's health status is a component of health quality used to assess medical care in many countries.

In higher learning institutions health of students is considered a key factor in determining the success of a student. The well-being of a student and the overall growth of an institution. In order to attract and retain students' universities must identify and meet the expectations of the students in terms of provision of quality health care. Therefore, institutions should be able to utilize the resources effectively in provision of good health care to students and staff.

The major concern of this present study is to find the level of satisfaction of health service provision to students in Taita Taveta University. Among the factors of concern are waiting time, availability of drugs, communications between students and health staff, respond to emergencies and general hygiene in the health unit.

1.2.0. STATEMENT OF THE PROBLEM

Health unit is amongst basic essential services in the university. Its significance can neither be overrated nor underrated. Satisfaction is fundamental factor in providing services at the health unit. However, not much information regarding the quality of services offered in Taita Taveta university health unit is available. It is therefore necessary to determine if the students are satisfied or dissatisfied by the services offered in Taita Taveta University Health unit.

1.3.0. JUSTIFICATION

The study on student satisfaction to health service provision from the university health unit is an important goal towards evaluating the overall wellbeing of students in the institution.

Patient satisfaction can help to identify the service quality dimensions that are most critical to patients and possibly use the results to improve patient satisfaction and inculcating evidence based management.

It will allow the health unit providers to learn if they are meeting the expectations of the students and if they are lacking in any area, the need to improve in those areas can be addressed.

It will also help us to learn what students perceive as important in the health care unit by building a picture of student's previous experience in the health unit.

The study will also provide sufficient information to the university management about the quality of services offered from health unit for the purpose of planning and equipping the university health unit.

1.4.0. LIMITATION

When carrying out this study, we expect to encounter various challenges such as:

1. Time constraints.
2. Financial constraints.
3. Uncooperative respondents.

To counter these challenges, we intend to:

1. Allocate more time to the study by meeting at least five times a week.
2. Equal contributions by project members.
3. Provide unanimous questionnaires to the respondents.

1.5.0. OBJECTIVES OF THE STUDY

1.5.1. GENERAL OBJECTIVE

- To determine the students' satisfaction of the services offered at Taita Taveta University health unit.

1.5.2. SPECIFIC OBJECTIVES

- To determine the level of satisfaction according to place of residence.
- To determine the level of satisfaction according to the year of study.
- To find out the level of satisfaction according to gender.

1.6.0. RESEARCH HYPOTHESIS

The hypothesis that we will wish to test will be :

(a) H_0: sf=sm

vs

H1: sf≠sm

where sf is the satisfaction level of female students and sm is satisfaction level of male students

(b) $H_{0:}$ s1=s2=s3=s4=s5

vs

$H_{1:}$ s1 ≠ s2≠ s3 ≠ s4≠ s5

where s1 is satisfaction index in year 1 students, s2 is the satisfaction index of year 2 students, s3 is satisfaction index of year 3 students', s4 is the satisfaction index of Year 4 students and s5 is the satisfaction of year 5 students

2.0 CHAPTER: 2

2.1 LITERATURE REVIEW

Introduction

This chapter covers literature review related to patient's satisfaction. The literature review is done focusing on physical environment, communication, admission process, privacy, response of staff, discharge, treatment with respect, waiting times, management of complaints, laboratory services, as they relate to patient's satisfaction. The theoretical and practical review is used to bring out the relationship between variables and the patient satisfaction. The following are studies that have been done relating to patient satisfaction towards the services provision at the health unit.

According to Risser (1975) on the review on patients' satisfaction he identified four components as a measure of satisfaction: the cost; the convenience; the provider's personal qualities and nature of interpersonal relationship and the providers of professional competence. In a thorough review studies of patients' satisfaction, Rubin listed the following as important components: nursing care, medical care, communication, ward management, ward environment, and discharge procedure.

Donabedian (1980) described the theory of patient satisfaction as an interpersonal aspect of care as an important role in determining the satisfaction patients derive from the health care. He stated that for a patient to be satisfied he or she should have a positive judgement towards every aspect of the quality of care delivered especially as it concerns interpersonal side in health care.

He suggested a framework of three key components in evaluating the satisfaction in a survey. The first was the perceived value the patient derives from going to medical care center for treatment. The second is whether the right tools were used for the treatment in which case the patient concern about qualification of the practitioners and quality of the tools used. And the third concern was about the service delivery process within the health care. The patient is concerned of issues such as timelines of service and the conduct of practitioners towards them was assessed.

One of other definitions which have been done on patients' satisfaction was that of Susie. Susie (1982) in her review of patient satisfaction literature defined patient satisfaction as positive evaluations on distinct dimensions throughout the illness episode, a particular health setting plan, or the health care system in general.

Susie suggested that satisfaction must be understood within the context in which a variety of elements may be more or less satisfying to the patient. She identified the following elements of measuring patient satisfaction. Accessibility convenience, Availability of resources, Continuity of care, Efficacy of care, Finances, Information gathering, Pleasantness of surrounding.

She also based her satisfaction level on aspects of physician style and patient perceptions. She argued that satisfaction is a function of the previous patient expectation, personal belief and values towards the health care. The Kaiser-Meyer-Olkin ($KMO>0.6$) and Bartlett's test of sphericity ($p<0.05$) statistics were used to test empirically whether the data were likely to factor well. Principal components are compared with service functions or satisfaction dimensions that have been identified in the Measurement Scale for Patient Satisfaction.

Another research on patient satisfaction was done by Fitzpatrick. Fitzpatrick (1983) argue that patients' satisfaction in health care services is influenced by their

individual social environment. Patients measured the satisfaction they derive from health care services against the perceived comfort or discomfort they feel with respect to the services they receive from the hospital. One-way analysis of variance, independent group t-test and chi-squared test were used to determine the relationship of other methodological characteristics with the response rate.

They did analysis of patients varying concerns in explaining different responses to medical consultations. Respondents judged the technical and instrumental actions provided in the hospital. Judgments were focused on whether the expertise was appropriately applied to the patient's problems. They also analyzed the relationship between the expressed and expectations of the patients and the subsequent satisfaction of the patients.

Baker (1991) also did a study on satisfaction and identified five components of satisfaction in the U.K. primary care settings: continuity of care, accessibility of surgery, quality of medical care, premises and availability of doctors. In the outpatients' context McIver (1991) proposed accessibility, waiting time, waiting environment, attitude of staff and patient's information as critical components. The components of patients' satisfaction listed by Meredith et al. (1993) included expectation, comprehension, participation, information and informed consent, risk perception and preference.

Booth et al. (1992) did another research on patient satisfaction basing his argument on time basis. He did a study on the length of time the patients were willing to wait to be served before they become dissatisfied. He latter analyzed how waiting time affected the patient satisfaction.

Aldana described the efforts of the government to improve its health care system need strong emphasis to the notion of the quality health care services provided.

According to the assessment done it was noted that for the best outcome in the health unit there must be patient's satisfaction (Aldana, 2001). Some other studies tend to decode that the dissatisfied clients of health care services tend to complain about establishment and also demoralize those who want to seek health care services (Nyer,1999). Even though the qualitative studies point out the problems encountered by the patients, Aldana et al. (2001) noted that the staff's behavior, for instance respect and politeness are the most important predictors for patient satisfaction with the health unit. Also they noted out that the unavailability of doctors and nurses as well as their negative their negative attitudes and behaviors involving insufficiency in terms of drugs, waiting time, response by the staff among others are the major conjunctives to dissatisfaction of the health care services. Random-effect equations were used to measure the variations at facility and state levels. All statistical analyses were completed using STATA version IC 11 (StataCorp LP, College Station, TX, USA, 2012).

In Kenya a lot has been done in ensuring universal quality health care provision to all population. The government aimed at improving standards, guidelines, structure, process and outcome of health services by applying quality management principles and tools; and satisfying patients/clients' needs in culturally appropriate way (Musa, 1996). Percentages and frequencies were used for sample description. Means and standard deviation were used to determine the extent of TQM implementation. The ANOVA test was used to test the differences in the implementation between different hospitals. Regression analysis was used to evaluate the relationships between nurses' socio-demographic variables, availability of total quality management (TQM) department as independent variables and the implementation of TQM as a dependent variable. Factor analysis was applied to identify the significant principles of TQM applied in hospitals, to minimize and to classify data

to a limited number of factors. P-value <0.05 was considered as statistically significant. Increased privatization meant a direct competition to the government public health facilities the efforts was to integrate all the health facilities in country by increasing the need for quality standards in the health care sub-sector, the government of Kenya through the ministry of public health have formulated and presented several policy statement and the implications while health service delivery investigations.

Krupat et al. (2000) also based his research on research on satisfaction determined by individual patients and physical orientation and the congruence between them. That is: patient centeredness, doctor's orientation towards power and decision making rather than emotion and lifestyle, the direction of the discrepancy between patients and physical orientation.

Another research on patient's satisfaction was done by Linda (2001) where the experience with the hospital environment was evaluated. This included the facility's parking lot, physical accessibility of the facility, the admissions process, encounters with physicians, lab personnel, doctors and nurses.

She also considered a number of factors that could impact the patient's perception of the care provided throughout an inpatient stay. The factors included the cleanness of the environment, the appearance of the facility, and the ease of access to specific location, the concern from various staff and the providers for the patient's wellbeing.

As for Derose et al. (2001) the main focus is on the overall satisfaction that consumers gain from consuming health services provided respectively. In addition, the patient's satisfaction is recognized as an essential component in the assessment of the health care quality. The model is estimated using maximum likelihood. In ordered logistic regression, an underlying outcome measurement is modelled as a

linear function of the independent variables and a set of cut points. Thus the probability of observing outcome corresponds to the probability that the estimated linear function, in addition to the random error, is within the range of the cut points estimated for the outcome.

According to World Health Organization (2003) availability and quality care and coverage of interventions are respectively a key function and a goal of an overall health system that has impact on health outcomes. To measure effective coverage, defined as the probability that an individual receives health gain from interventions if needed, contributes to a wider understanding of performance of health system

Availability and accessibility coverage are two components defining effective coverage and have geographic dimension. Availability coverage reflects what resources are available and in what amount for delivering an intervention. This may include the number of health facilities, not personnel, hours of operation, waiting time or availability of different technologies. Accessibility coverage measures how conveniently the resources are accessible to the population.

Boudreaux et al. (2004) also did a research concerning patient satisfaction. They assessed the stability of the predictors of patient satisfaction across multiple assessments over 17 months.

Their predictor variables included: demographics, visit characteristic, perceived waiting times, subjective quality of care indicators and the overall satisfaction level of the patients. Patient satisfaction with various throughput times (i.e., perceived throughput time) and overall ED visit was assessed by using a seven-point scale (1 = poor, 7 = excellent). Analysis of variance, analysis of covariance (ANCOVA), and correlations were conducted to explore the hypotheses

A review of patient satisfaction conducted by hospitals in Australia shows how they used the patient satisfaction level as a way of measuring the quality of public hospitals in Australia (Pearse, 2005). One of their objective was to form the basis for minimum national data set on public hospital patient satisfaction or patient experience. Another objective was to identify data items that could be used to report on an indicator of public hospital quality.

To address the aspect of patient experience they consider several aspects including; Waiting time where they assessed the experience of patients having admission dates change. Admission process where they focused on the time patients waited to be taken to the ward/room/bed. Communication where they assessed the adequacy of information provided about the condition or treatment and the extent to which patients believe they had opportunities to ask questions. Privacy where patient's assessments on the extent on which privacy was respected. Responsiveness of the staff where they looked on how long the nurses took to respond to a call button and availability of doctors. Management of complaints where they assessed on how complaints were handled. Treatment with respect where they assessed the patients' views on whether hospitals staff treated them with courtesy, respect, politeness and consideration. They also assessed the extent to which religious and cultural beliefs were respected. Discharge where they look at information provided at discharge on how to manage the patient's condition. Physical environment where they assessed the cleanness of rooms, toilets, bathrooms, quietness and quality and quantity of food.

Quintana et al. (2006) also did a research on patient satisfaction. They identified possible predictors of patient satisfaction in relation to: (1) Socio-demographic variables (2) History of admission and, (3) survey logistics for six domains of patient

satisfaction which included information, human care, visiting, comfort, intimacy and cleanness.

He studied if age and gender significantly affected the satisfaction. He also did a study on how the level of education related to the visiting, intimacy and cleanness. He also obtained information on the previous admissions related to the human care, comforts, visiting and cleanness can describe the patients' satisfaction.

Also Chostonay et al. (2011) stated that the basic factor to health care is monitoring and assessing the patient satisfaction with the health care as it is an important input to raising the standard of health status. The quality of services provided in the health care could be crucial if you incorporate social acceptability as an important quality. Some common measures taken to assess the quality of health care services that should be captured is waiting times, patient throughput and response by the nurse or doctor or staff should be the key factors to look up to as far as health service quality is concerned irrespective of the nature of the patient.

Patients satisfaction is reached when the patient's perception of the quality of care and services they receive in the health care facility is positive or satisfying (Kartha, 2013). The patient's satisfaction is important in shaping and assessing health care services. They considered patient's satisfaction to have been deemed as one of the basic determinants for the successful provision of health care services. They suggested that it was much simpler to assess the patient's satisfaction towards the services provided than to assess the quality of medical services that they get at their point of sickness. Thus it was much important to look at the interaction staff, physical environment, waiting time, responsiveness etc.

To measure quality it is imperative to review some of the premises like structure which is the total composition of resources used to implement health care services

including staff ,applied rules and regulations and totality of the physical facilities, process which is an intermediate output such as therapies diagnostic and utilization rate and even access to particular care items and outcome which is the final product of care such as comfort longevity including general health status and patient satisfaction (Kartha, 2013).

According to Delta (2016) they considered patient's satisfaction as one of the drastically desired outcome of health care, and denote it as a likely capable as to usability of health care services from time to time. He termed measurement of patient's satisfaction to involve seculars of patient's opinion on health care, identifying problems in health care and assessment of health care services respectively. Patient satisfaction is termed as one of the most well-built yard stick aspects to account for the services provided at the health unit. There was also the notation that patient's satisfaction is a great reservation in that there is a relationship between several factors as it includes; lifestyle, past experience, future expectations and value of individuals and society.

3.0. CHAPTER: 3

3.1. RESEARCH METHODOLOGY

Research methodology is arrangement of conditions for collection of data in a manner that aims to combine relevance with the research purpose. It constitutes the blueprint for the collection, measurement and analysis of data (Kothari, 2003).

3.1.1. Research site

Research site is a single organization responsible for conducting a research at a particular locality.

Taita Taveta University is one of the public universities in Kenya offering certificate, diploma, undergraduate and post graduate courses in different disciplines. It is located in the coastal region in Taita Taveta County. It is approximately 8km from Voi town. It was established in the year 2008 as a constituent college of Jomo Kenyatta University of Agriculture and Technology and was later awarded a charter in the year 2016.The institution has got different facilities including the library, catering and accommodation, games and sports and the health unit that cater for the needs of the students. In our research the main focus is the health unit.

3.1.2. Sampling unit

Sampling unit is a single section selected to research and gather statistics of the whole. In our research our sampling unit will be the students. The university consists of students from first year of study to fifth year of study. Students were stratified according to year of study where questionnaires were administered randomly

3.1.3. Sample size

A sample is defined as set of respondents selected from a larger population for a purpose of a survey. Sampling is a process of selecting a number of objects or individuals from a population such that the selected group contains elements representative of the characteristics found in the entire group.

Sample size is the number (n) of observations taken from a population through which statistical inferences for the whole population are made. In this study we calculated our sample using slovin's formula (slovin, 1960). The formula is used to calculate the sample size (n) given the population size (N) and margin error (e). It is a random sampling technique formulae to estimate sampling size. It is computed as follows:

Slovin's formula

$n=N/1+N(e)^2$

n=The sample size

where N= The total population

e= The error margin

where error margin e =1-confidence level.

We chose confidence level of 95%

Based on the data obtained from the class representatives according to the year of study in the various courses (academic year 2018/2019) we were able to estimate the total school population as 2891. Using the Slovin's formula our sample size is:

$n = 2891/ (1+2891(0.05)^2)$

= 352

3.1.4. Sampling techniques

Sampling techniques is a procedure for selecting sample members from a population. In this research probability sampling technique was used, where by each individual had an equal chance of being selected in the sample.

In this research stratified sampling was used to divide student population according to their year of study (year 1, year 2, year 3, year 4 and year 5). Random sampling was used to select students from each year of study to participate in the study. We used stratified random sampling formula to calculate the number of students in each stratum. It is computed as follows:

Stratified random sample formula.

$n_i = (n/N) *k$

Where

n_i= Sample size of the strata.

n= Sample size

N=Total population.

K=Layer size (number of students in each year of study)

The following are the sample sizes of each stratum.

Year of study	Number of students in each year of study	Number of students in sample
Year1	850	(352/2891)*850=104
Year 2	698	(352/2891)*698=85
Year 3	832	(352/2891)*832=102
Year 4	476	(352/2891)*476=58
Year 5	35	(352/2891)*35=5
Total	2891	354

The variation in the sample size is due to rounding off error. 352≈354

3.1.5. Method of data collection

During our research we administered questionnaires through KoBoCollect android application method. The questions were organized under broad areas that could be used as a measure of students' satisfaction.

3.2.0 DATA ANALYSIS

3.2.1. Methods of data analysis and presentation

The results generated were analyzed using statistical package for social sciences version 20 (SPSS) and R software. Students satisfaction was rated as "satisfied" and "dissatisfied". The dependent variable is the level of satisfaction and the independent variables is (gender, year of study, place of residence, doctor's attitude, general hygiene, reception). Chi-square test and Logistic regression was done to determine the level of student satisfaction.

Chi-square test

The Chi Square statistic is commonly used for testing relationships between categorical variables. It is used to measure the association between one dependent categorical variable and one independent categorical variable.

The Chi-Square statistic is most commonly used to evaluate Tests of Independence when using a cross tabulation (also known as a bivariate table). Cross tabulation presents the distributions of two categorical variables simultaneously, with the intersections of the categories of the variables appearing in the cells of the table. The Test of Independence assesses whether an association exists between the two variables by comparing the observed pattern of responses in the cells to the pattern that would be expected if the variables were truly independent of each other. Calculating the Chi-Square statistic and comparing it against a critical value from the Chi-Square distribution allows the researcher to assess whether the observed cell counts are significantly different from the expected cell counts.

Chi-squared test was performed to determine the association between student's satisfaction and each individual categorical variable. We will then construct two

tests one including all independent variables and the other that include only those that showed statistical significance ($p<0.05$). Data was arranged in a contingency table and calculated chi-square value.

The variables values were presented in the contingency table as follows:

n_{11}	n12	n1+
n21	n22	n2+
n+1	n+2	N

We then calculated X^2 as follows:

$$X^2=\sum(n_{ij}-\mu_{ij})2/\mu_{ij}$$

Where $\mu_{ij} =(n_{i+}n_{+j})/n$

$$n_{ij} = n_{i+}n_{+j}$$

where i = the number of rows

j= number of columns

we then read $x^2_{(I-1)(J-1)}$ from the table and compare with the calculated X^2 value to test for significance

Logistic regression

Logistic regression analysis examines the influence of various factors on dichotomous outcome by estimating the probability of event's occurrence. It does this by examining the relationship between one or more independent variables and the log odds of the dichotomous outcome by calculating changes in the log odds of the dependent as opposed to the dependent itself.

Since our dependent variable is satisfaction which each student was rated as either "satisfied" or "dissatisfied", we used logistic regression analysis for our data.

where:

Y = 1 if satisfied

Y = 0 if not satisfied

Y follows a binomial distribution (Y~bin(n,p))

Where the expected value of Y is p (E(Y)=p)

Logistic model

$l=\beta_0+\beta_1x_1+...+\beta_nx_n$

Where

l=log of odds

l=log(p(y=1)/p(1-(y=1))

β's are the parameters of the model to be estimated

The probability of Y=1 is denoted as p where

$p=\exp(\beta_0+\beta_1x_1+\ldots.+\beta_nx_n) /(1+ \exp(\beta_0+\beta_1x_1+\ldots.+\beta_nx_n)$

And p refers is the probability that the student is satisfied with the services offered at the health unit.

To calculate the log of odds between a student being satisfied and a student being dissatisfied will be then calculated as follows

$\text{logit } (p)=\ln(p/1-p)$

Among the independent variables (X_i) which were measured to answer the objective of the study in questionnaire included the following;

1. Academic year.
2. Gender
3. Physical Environment.
4. Relationship between staff and students.
5. Services provided by the doctors and other Para medic staff.
6. Availability of drugs.
7. Referral and follow up.

Descriptive statistics

Descriptive statistics were used to describe the basic features in the study. They provided simple summaries about the data and their measures.

Descriptive statistics helped us to simplify large amounts of data in a sensible way. Each descriptive statistic reduced lots of data into a simpler summary.

In our study we used table frequencies, cross tabulations and graphical summaries such as bar graphs and pie charts for the data collected.

CHAPTER FOUR

DATA ANALYSIS

Data collected were analyzed using Statistical Package for Social science(SPSS) version 20 and R package for statistics where students' overall satisfaction with the services offered at health unit were recorded into two categories: "satisfied" and "dissatisfied".

The level of satisfaction of some independent variables was originally measured using a five point likert scale (excellent; very good; good; fair; poor). These were collapsed into two groups: satisfied (excellent, very good and good) which was given a score of "1" and dissatisfied (fair and poor) which was given a sore of "0".

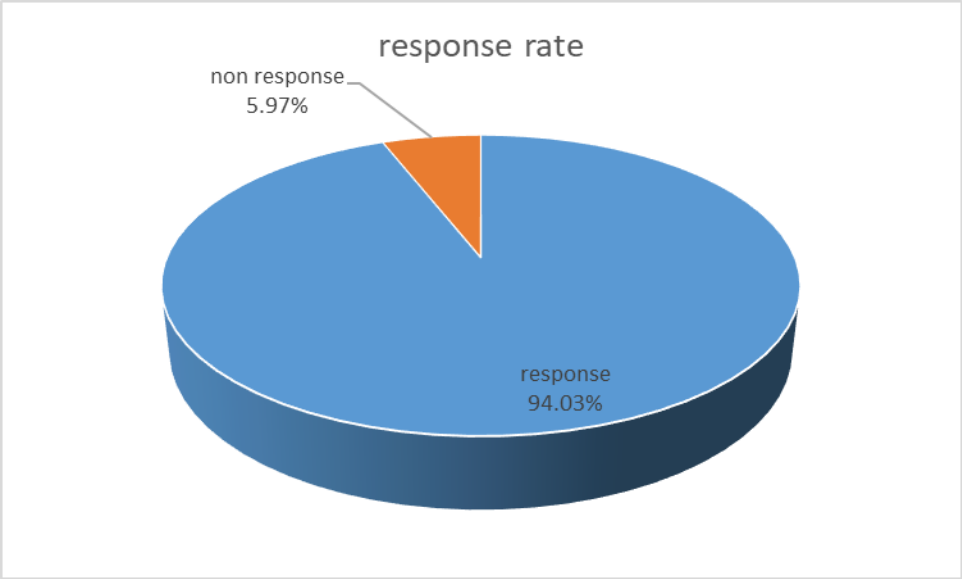
The covariates with positive response was given a score of "1" and negative response a score of "0".

General satisfaction was the arrived at by calculating the average score of the covariates. The score greater than 50% was considered to be satisfied and was given and a score less than 50% was considered to be dissatisfied.

DESCRIPTIVE STATISTICS

Table1: Response rate

	Frequency	Percentage
Response	331	94.03
Non- response	21	5.97
Total	352	100



The study yielded a total of 331 students the response rate of 94.03% which was favorable considering our sample size.

Table 2: Response rate in terms of gender

	Frequency	Percentage
Male	171	51.66
Female	160	48.34
Total	331	100

Table 3: Response rate in terms of year of study

	Frequency	Percentage
First	103	31.12
Second	64	19.34
Third	88	26.59
Fourth	70	21.15
Fifth	6	1.80
Total	331	100

Table 4: Response rate in terms of place of Residence

	Frequency	Percentage
Resident	138	41.7
Non resident	193	58.3
Total	332	100

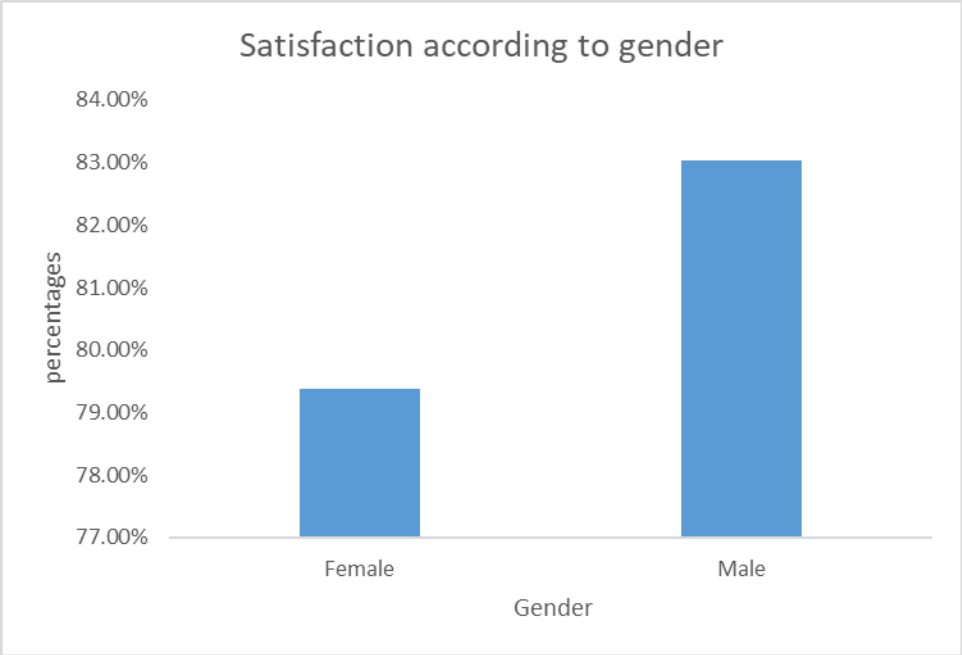
Table 5: Proportions of students' rating on various indicators of quality care in Taita Taveta University Health Unit.

Hygiene	Frequency	Percentage
Satisfied	245	71.02
Dissatisfied	86	28.98
Total	331	100
Staff Availability		
Satisfied	312	94.26
Dissatisfied	19	5.74
Total	331	100
Conditional explanation		
Satisfied	277	83.67
Dissatisfied	54	16.33
Total	331	100
Discussion Time		
Satisfied	282	85.20
Dissatisfied	49	14.80
Total	331	100
Instruction for Medication		
Satisfied	258	78.20

Dissatisfied	72	21.80
Total	330	100
Drugs Referral		
Yes	157	47.43
No	174	52.57
Total	331	100
Treatment Referral		
Yes	217	65.76
No	113	34.24
Total	330	100

Table 6: Satisfaction level according to gender

	Satisfaction			
Gender	0	1	**Total**	**Proportion of satisfaction**
0	33	127	160	79.38%
1	29	142	171	83.04%
Total	62	269	331	

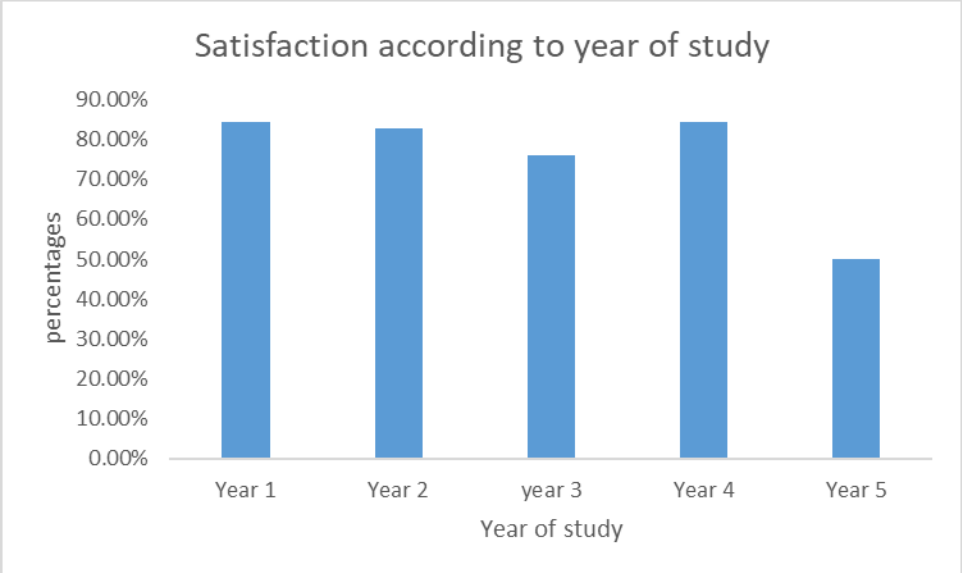


From table 6 above it is evident that male students were more satisfied (83.04%) with the services offered at the University health unit compared to female students (79.38%)

Pie chart for the satisfaction level according to Gender

Table 7: Satisfaction according to year of study.

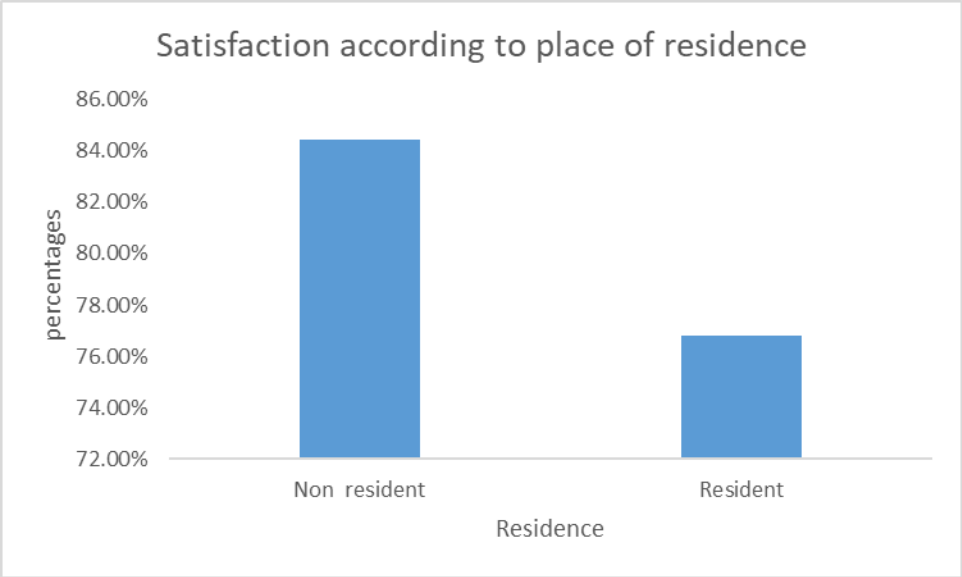
	satisfaction			
year of study	0	1	**Total**	**Proportion of satisfaction**
1	16	87	103	84.47%
2	11	53	64	82.81%
3	21	67	88	76.13%
4	11	59	70	84.29%
5	3	3	6	50.00%
Total	62	269	331	



From table 7 above it is evident that students in the first year of study are more satisfied (84.47%) with the services offered at the university health unit.

Table 8: Satisfaction according to place of residence.

	Satisfaction			
Residence	0	1	Total	**Proportion of satisfaction**
0	30	163	193	84.46%
1	32	106	138	76.81%
Total	62	269	331	



From table 8 above it is evident that students who reside outside the university were more satisfied (84.46%) with the services offered at the University health unit compared to students who reside in university hostels university (76.81%).

Chi-Square Test

The results of the Chi-square test was compared to the tabulated value ($\mathbf{P}_i \sim \chi^2_{\alpha,(1)}$) =3.841 where α=0.05 and 1 degree of freedom.

If the calculated value ≥ tabulated value, we reject the null hypothesis and accept the alternative hypothesis if the calculated value ≤ tabulated value.

Relationship between gender and satisfaction

The hypothesis to be tested;

Ho: There is no association between gender and satisfaction.

H1: There is association between gender and satisfaction.

Chi-Square output

Pearson's Chi-squared test

data: gender and satisfaction

X-squared = 0.50879, df = 1, p-value = 0.4757

From the output above $\chi_c \leq \chi^2_{\alpha,(1)}$ hence we accept the null hypothesis. Therefore we conclude that there is no association between gender and satisfaction.

Relationship between place of residence and satisfaction

The hypothesis to be tested;

Ho: There is no association between residence and satisfaction.

H1: There is association between residence and satisfaction.

Chi-Square output

Pearson's Chi-squared test

data: residence and satisfaction

X-squared = 2.6071, df= 1, p-value = 0.1064

From the output above $\chi_c \leq \chi^2_{\alpha, (1)}$ hence we accept the null hypothesis. Therefore, we conclude that there is no association between place of residence and satisfaction level of the student.

Relationship between year of study and satisfaction

The hypothesis to be tested;

Ho: There is no association between year of study and satisfaction.

H1: There is association between year of study and satisfaction.

Chi-Square output

Pearson's Chi-squared test

data: study and satisfaction

X-squared = 6.587, df = 4, p-value = 0.1594

From the output above $\chi_c \leq \chi^2_{\alpha, (4)}$ hence we accept the null hypothesis. Therefore, we conclude that there is no association between year of study and satisfaction level of the student.

LOGISTIC REGRESION

Logistic model

Logistic regression was used to assess the relationship between satisfaction and other independent variable.

Hypothesis to be tested.

H0: There is no relationship between satisfaction and independent variables

H1: There is relationship between satisfaction and independent variables

The output is as shown bellow.

Call:

glm(formula = satisfaction~ factor(Gender) + factor(Year) +

factor(Residence) + Attendance_rate + Hygiene + attitude_of_staff +

Discussion_time +instructions_for_medication+ Condition_Explanation, family = "binomial")

Deviance Residuals:

Min	1Q	Median	3Q	Max
-2.29406	0.00035	0.00078	0.01152	2.55729

Coefficients:

	Estimate	Std. Error	z value	Pr(>|z|)	
(Intercept)	-11.1164	2.9670	-3.747	0.000179	***
factor(Gender)1	-0.9126	1.0160	-0.898	0.369050	
factor(Year)2	-1.0088	2.0126	-0.501	0.616214	
factor(Year)3	-0.4565	1.4206	-0.321	0.747955	
factor(Year)4	0.3064	1.2442	0.246	0.805471	
factor(Year)5	-3.6061	96.5071	-0.037	0.970193	
factor(Residence)1	-1.1616	1.1600	-1.001	0.316645	
Attendance_rate	7.1575	2.3529	3.042	0.002350	**

Hygiene 4.3664 1.4478 3.016 0.002563 **

Attitude_of_staff 5.4611 1.4329 3.811 0.000138 ***

Discussion_time 5.7878 1.8051 3.206 0.001345 **

Instructions_for_medication 3.7907 0.8231 4.605 4.12e-06 ***

Condition_Explanation 4.9549 1.7206 2.880 0.003980 **

Signif. codes: 0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

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TAITA TAVETA UNIVERSITY

QUESTIONNAIRE

We are students at Taita Taveta University studying bachelor of science in statistics. We are here to collect data on STUDENT SATISFACTION WITH SERVICES OFFERED AT TAITA TAVETA UNIVERSITY HEALTH UNIT. The information will be kept confidential.

SECTION 1

1. What is your gender?
   Male [ ] Female [ ]
2. What is your year of study?
   First [ ] Second [ ] Third [ ] Fourth [ ] FIFTH [ ]
3. How does the university regard you?
   Resident [ ] Non Resident [ ]

SECTION 2

4. Have you ever visited the health unit?
   Yes [ ] No [ ]
5. How do you rate the general hygiene within the health unit?
   Excellent [ ] Very good [ ] Good [ ] Fair[ ] Poor [ ]
6. During your visit were the staff available?
   Yes [ ] No [ ]
7. During your visit how fast were you attended to?
   Fast [ ] Slow [ ]
8. How do you rate the attitude of the health unit staff during your visit?
   Excellent [ ] Very good [ ] Good [ ] Fair[ ] Poor [ ]
9. Were you given explanation about your condition?
   Yes [ ] No [ ]

10. Were you given enough time while discussing your condition of treatment?
    Yes [ ] No [ ]
11. How do you rate the instructions for medication by the pharmacist?
    Excellent [ ] Very good [ ] Good [ ] Fair [ ] Poor [ ]
12. Have you ever been referred to buy drugs elsewhere?
    Yes [ ] No [ ]
13. Have you ever been referred for treatment elsewhere?
    Yes [ ] No [ ]

Thank you for participation. We appreciate your efforts towards making this study a success.