博士論文

Patients' satisfaction and health workers' job satisfaction: related factors and their association in Callao, Peru

(ペルーカヤオ市における患者の満足度と医療従事者の職務満足度に影響を与える要因と関連)

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TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF APPENDICES

LIST OF ABBREVIATIONS

AOR	Adjusted Odds Ratio
CHI	Comprehensive Health Insurance
CI	Confidence Interval
GDP	Gross domestic product
HDI	Human development index
HIV	Human Immunodeficiency Virus
HRH	Human resources for health
MDG	Millennium development goal
MMR	Maternal mortality rate
MoH	Ministry of Health
NGO	Non-government organization
PHCC	Primary health care center
SD	Standard deviation
SERVQUAL	Service quality
SE	Standard error
THE	Total expenditure in health
UHC	Universal health coverage
VIF	Variance inflation factor
WHO	World Health Organization

ABSTRACT

Objective: The purposes of the present study in Peru were 1) to determine patients' satisfaction and health workers' job satisfaction in primary health care centers in Callao; 2) to examine the association between patient satisfaction and health workers' job satisfaction; and 3) to explore the predictors of health workers' job satisfaction.

Methods: This is a cross-sectional study conducted among 363 health workers and randomly selected 1,556 patients from 21 primary health care centers in Callao, Peru. In descriptive analysis, Chi-square test and t-test were used as appropriate. Factors associated with patients' satisfaction were assessed by robust multiple logistic regression clustered by health center. Factors associated with health workers' job satisfaction were assessed by robust multiple ordinal logistic regression clustered by health center.

Results: Among 1,556 patients, 37.5% were satisfied with the health services and among 363 health workers, 32.0% were satisfied with their jobs. Factors associated with patients' higher satisfaction included a shorter waiting time, visiting the health center for a follow-up appointment, not having to make any payments for the medical services received, having a poorer self-rated health status and being seen in the consultation by a nutritionist, psychologist or nurse. Health workers' higher job satisfaction was associated with patients' higher satisfaction with the empathy and assurance domain. Factors associated with health workers' higher job satisfaction included not having a dual practice, having a third party contract and having less working hours per week.

Conclusions: This study found a low patients' and health workers' satisfaction with health care services and job, respectively, in primary health care centers in Callao, Peru. Health workers' higher job satisfaction was associated with patients' higher satisfaction

with the empathy and assurance domain. This study suggests that, in order to improve patients' satisfaction with their health services, improving health workers' job satisfaction is imperative.

Keywords: quality of health care, health manpower, job satisfaction, primary health care

1. INTRODUCTION

1.1 Quality of healthcare

Provision of quality healthcare services is one of the ultimate goals of any health system. Quality of health care can be defined as "the degree to which health care services for individuals and populations increase the likelihood of desired health outcomes and are consistent with current professional knowledge" [1]. It can be sub-divided in two facets, technical and expressive quality [2,3].

Technical quality refers to the accuracy of medical diagnoses and procedures; and it can be assessed on terms of structure, process and outcome [3-5]. Due to its characteristics, technical quality is generally comprehensible to the healthcare providers, but not to the patients. Patients essentially perceive and understand expressive quality. Expressive quality refers to the way in which healthcare services are delivered [3,4]. It is the result of patients' comparison of his or her perception of the medical encounter experience with his or her pre-encounter expectations [7-9].

The service quality model developed by Parasuraman [10] proposed that the service quality is a function of the differences between the expectation and performance of the quality dimensions (Figure 1). This model is based on a gap analysis, and it identifies 5 gaps that can lead to an unsuccessful delivery of services. Gap 1 is the difference between consumer's expectations and management's perceptions of those expectations. Gap 2 is the difference between management's perceptions of consumer's expectations and service quality specifications. Gap 3 is the difference between service quality specifications and service actually delivered. Gap 4 is the difference between service

delivery and the communications to consumers about service delivery. Gap 5 is the difference between consumer's expectations and perceived services. This gap depends on the size and the direction of the four previous gaps. In this model, the expected service depends on the words of mouth communication, personal needs and past experience. Under this framework, the expressive quality of health care interpreted through patient's satisfaction can be explained with the Gap 5 of the service quality model.

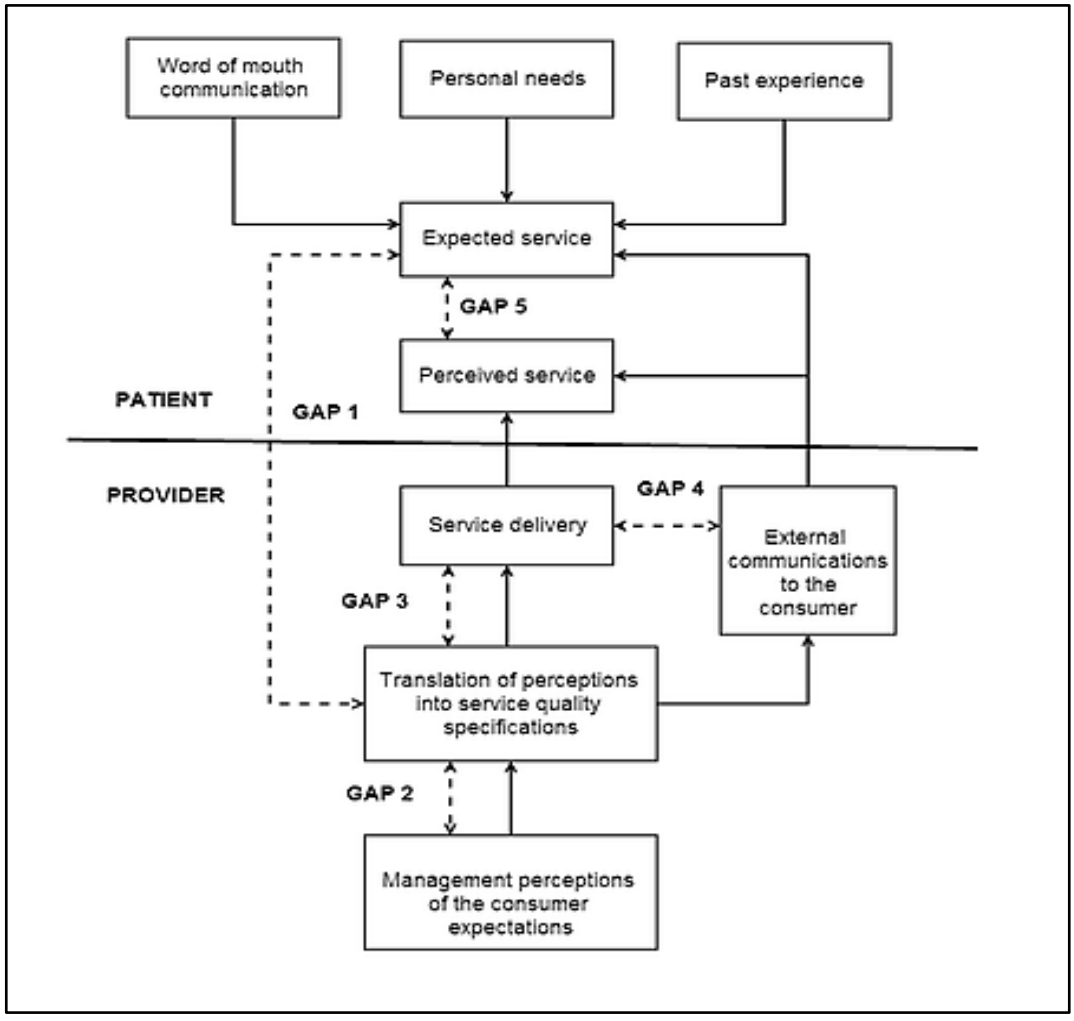

Figure 1. Service quality model

Source: Parasuraman et al, 1985

1.2 Patients' satisfaction

Patient satisfaction is a desired outcome of the health care provided [5] and of health systems' performance [11]. There is growing consensus that assessment of quality of health care services should be based in part on patients' perceptions of care and their satisfaction [12,13]. Furthermore, satisfied patients are more likely to adhere to the treatment they are given [14,15], participate in their treatment [16], and return to continue to use medical services [17].

Patient satisfaction is a multidimensional evaluation of various aspects of the health care received [18]. Dimensions of patient's satisfaction include 12 elements. These are satisfaction with access, cost, overall quality, humanness, competence, information provided, bureaucratic arrangements, physical facilities, providers' attention to psychosocial problems, continuity of care, outcome of care, and overall satisfaction [19]. Patient's satisfaction is a combination of patient's expectations and actual experience regarding healthcare provided [20].

Patients' satisfaction is known to be associated with predictors related to patients, health care providers' and health services' characteristics. These predictors include patients' age [21-24], education level [22,25], and overall health and emotional status [25-29]. They also include health care providers' age and gender [30], communication skills [21,27,31] and perceived technical competence of the health care provider [27,32]. Predictors related to the health service characteristics are waiting time and duration of the consultation [27,31,33].

1.3 Job satisfaction of health workers

Job satisfaction is a multifaceted phenomenon that entails an individual's feelings towards his/her job [34]. Employee's job satisfaction results from the interactions between job experience, working environment, and motivation [35]. Although it may not be directly observed, job satisfaction has been identified as critical to the retention and performance of health workers [36,37], and an important element of overall health system's performance [38].

Importance of job satisfaction relies on its potential effect on behaviors and well-being of health workers [39]. Job dissatisfaction is related to intention to quit, turnover rate, absenteeism, and intention to switch from public to private sector [36,39-42]. Overall, poor job satisfaction may contribute to shortages of health care providers [43]. Performance of health workers can also be affected by satisfaction. Job dissatisfaction increases work accidents and organizational conflicts [44]. This in turn may increase medical errors and endanger patient safety [45]. In addition, job satisfaction is an important factor influencing health of workers, as lower satisfaction levels increases the risk of anxiety, depression and burnout [46].

Factors related to job satisfaction can be divided into intrinsic-motivational factors and extrinsic-hygiene factors. Presence of intrinsic-motivational factors can create job satisfaction; these factors include recognition, career development, work tasks and responsibility. While the absence of extrinsic-hygiene factors can generate job dissatisfaction, such factors are working conditions, salary, job security and relationships with co-workers and supervisor [47]. Previous studies among health workers found that higher salaries [48-50] adequate staffing, good working environment [35], opportunities for personal and professional growth [51] and job security [52] were associated with

higher job satisfaction. On the contrary, longer working hours [49] and having administrative duties [53] were associated with higher job dissatisfaction.

1.4 Association between patient satisfaction and job satisfaction

Patient satisfaction with care and job satisfaction among health care providers are recognized as an important dimension within quality of care [54]. Generally, job satisfaction of employees is associated with their job performance [55]. Employees satisfied with their job are more motivated and engaged to do well their jobs.

Job satisfaction affects health workers' attitudes and behaviors towards patients, which in turn affect patients' perception of health care provided. Physicians who are satisfied with their job tend to be more open with their patients and pay attention to psychosocial aspects [56]. Additionally, higher physician's job satisfaction is associated with higher patient trust, higher continuity of primary physician and higher patient's rating of care provided by their primary physician [57, 58]. Surgeon's job satisfaction correlates with treatment outcome and overall patient satisfaction, and kindness of medical staff is an important characteristic for patient's satisfaction [59]. On the other hand, doctors' dissatisfaction with their job correlates with unfavorable prescription behavior and higher referral rate [56].

Studies among non-physician health workers show similar results. Patients cared for on a unit that nurses characterized as having good working conditions, were more than twice likely as other patients to report high satisfaction with their care, and their nurses reported significantly lower burnout rates [60].

1.5 Health system of Peru

Peru is an upper middle income country located in the central and western area of South America [61]. It has an estimated per capita GDP of US$ 7,135, equivalent to US$ 11,403 adjusted for purchasing power parity [62]; and a human development index (HDI) of 0.741, which lies in the high human development category in the 77th place [63].

Peru's health profile can be described through the progress of the health-related Millennium Development Goals (MDGs). MDG 4 has been reached, as the under-five mortality rate (21 deaths per 1,000 live births) and infant mortality rate (17 deaths per 1,000 live births) are already below the 2015 targeted value. MDG 5 is in progress, as the maternal mortality rate (MMR) has been reduced by 65% between the year 1991 and 2011. Additional 29% reduction of MMR is needed to reach the goal of 66 deaths per 100,000 live births. MDG 6 is also in progress. The HIV prevalence has remained below 1% since 1996, and incidence of malaria and tuberculosis cases is decreasing [64].

Peru has a dual health system with a public and a private sector. The public sector is divided into the direct contributions regimen and the subsidized regimen (or indirect contributions). The direct contributions regimen corresponds to the social security (for salaried workers and their family members) and the armed and police forces health networks. The subsidized regimen corresponds to the health services provided by the government to the uninsured population through the health facilities network of the Ministry of Health (MoH). These services are provided in exchange to variable amounts of recovery fees and through the Comprehensive Health Insurance (CHI). The CHI subsidizes the provision of services to the population living in poverty and extreme poverty conditions. The private sector is composed of for-profit and non-profit institutions. For-profit institutions are clinics, medical centers, private doctor's and dentist's office,

diagnostic imaging and laboratory services, and the health facilities of mining, oil and sugar companies. Non-profit institutions include non-governmental organizations (NGOs), Red Cross, and religious and faith based organizations [65, 66].

Public health facilities which are under the MoH are classified by their technical complexity in three levels of health care. The objective of this classification is to satisfy the populations' needs in an efficient and effective way according to the MoH's supply capacity. The first level of care (primary health care level) is recognized as the gateway to the health system, serving 70-80% of the system's demand. At this level, low complexity health problems are resolved, giving priority to early diagnosis and treatment of common health conditions. The second level of care facilities offers a higher degree of specialization in human resources and technology. They serve 10-20% of the population, providing care to those patients transferred from the first level of care, or to those who need urgent or emergency treatment. The third level of care facilities provide the highest resolution capabilities to solve complex and/or uncommon health disorders, targeting 5-10% of the population [67].

WHO's health system framework identifies six building blocks for a well-functioning health system. These building blocks are health finance, health workforce, health information system, health services, medical products and governance [68]. This framework can be useful to describe the health system of Peru as shown below.

Health expenditure is low in Peru. As of 2010, health expenditure was 4.9% of GDP, one of the lowest in South America, while countries such as Brazil and Uruguay almost double their investment in health compared to Peru [69]. It is also below the regional expenditure average of 6.6% of GDP [70]. Public expenditure on health was 56.2% of the total health expenditure (THE), while the private expenditure represented

43.8% of THE. Out of pocket expenditure represented 84.9% of the private expenditure, and 11.9% corresponded to private pre-paid plans [69].

Health insurance coverage has been consistently increasing since 2004. Insured population increased from 37.4% in 2004 to 63.4% in 2010. Among them, 36.3% belong to the CHI, 21.6% belong to the social health insurance and 5.5% to other insurances including private and armed forces. Since 2009, recognizing the right of all people to quality health care, Peru declared universal health coverage (UHC), using the CHI as a basis. The coverage of services of the UHC is 65% of the national burden of disease [71].

Peru is one of the 57 countries worldwide with a severe shortage of health workers [72]. Although there has been an overall increase in the number of HRH since 2005 (from 132,000 in 2005 to 180,000 in 2009) [73], HRH density still remains below the minimum threshold of 2.5 per 1000 population [72], with a density of 1.9 per 1000 population in 2010 [73]. There is a lack of health workers at the primary level of health, especially in rural areas; and of specialists in the country as a whole [74].

Majority of health facilities belong to the public sector. At primary health care level, the MoH concentrates 96% of health posts and 57% of health centers; while at secondary and tertiary level, MoH had 30% of hospitals. In 2009, there were 3.1 health facilities per 10,000 population, which corresponds to 0.2 hospitals, 0.8 health centers and 2.1 health posts per 10,000 population. The number of hospital beds per 10,000 population has remained stable at 15 between 2003 and 2010. Out of the total available hospital beds, 56.9% belong to the MoH; while the other 43.1% corresponds to the private sector, the social security and the armed forces [75].

Access and coverage of health services has increased in the last decade. The percentage of births attended by skilled health personnel had increased from 59% in 2000 to 85% in 2012. Antenatal care (more than 4 visits) had increased from 69% in 2000 to 94% in 2012. Measles immunization increased from 91% in 2000 to 96% in 2011 [69, 76].

Access to medical products varied between private and public sector. Median consumer price ratio of selected generic medicines in the public sector was 1.4, while it was 5.6 in the private sector. The median availability of selected generic medicines in the public sector was 61.5%, and in the private sector was 60.9% [69].

Health information is generated by the National Institute of Statistics and Informatics, who is responsible for the population census, projections, vital statistics information and demographic health surveys. Also, there is the public network of information (MoH, social security and armed forces health facilities) and the private sector that has its own health information system. The National Institute of Health's mission is to promote, develop and dissemination of scientific research [65].

1.6 Patient's satisfaction and health workers' job satisfaction in Peru

Four studies on patients' satisfaction have been reported in Peru. A study on the internal medicine outpatient clinic of a public hospital found that 44% of the patients were satisfied with the health services received. Age, gender and level of education were associated with global satisfaction [77]. A study in the dermatology outpatient clinic of a public hospital found that 76% of their patients were satisfied. Patient's better satisfaction was associated with receiving good information about their disease, and their dissatisfaction was associated with longer waiting time and with the perception that the

doctor was in a hurry to finish the appointment quickly [78]. Patient satisfaction levels in the outpatient clinic and in the emergency department of a public hospital were 46% and 52%, respectively [79]. A study among hospitalized patients in the obstetrics department found that 86.6% of patients and 72.4% of family members were satisfied with the services received [80].

Evidence of job satisfaction of health workers in Peru is limited. The literature search performed showed only one study in a public hospital in Peru [81]. This study shows that 22.7% of physicians, 26.0% of nurses and midwives, and 49.0% of technical nurses were satisfied with their jobs. Among physicians, work environment and relationship with co-workers was related with higher job satisfaction. Work load and professional growth were associated with better job satisfaction of nurse and midwives. While for technical nurses, salary and supervision were associated with better job satisfaction [81].

1.7 Justification of the study

Patients' satisfaction with quality of health care and health workers' job satisfaction are both important measurements of health system performance [36]. Patients' satisfaction is multifactorial [24, 82], and health workers' job satisfaction has been identified as one of the factors associated with it [36, 54,56-60]. However, most of the studies have been focused on physicians' job satisfaction [56-59]. During their visit to a hospital or a health center, patients not only interact with their physician, but also with technical and other administrative staff. These encounters can also affect patients' satisfaction [36,54,60]. Therefore, is important to study the job satisfaction of the health

team rather than by cadres.

Majority of the studies examining the association between patient's and health worker' job satisfaction have been done in developed countries [36, 54,56-60]. It remains unclear whether these findings can be generalizable to developing countries, where health workers are exposed to different working conditions and patients have different cultural background which can affect their perception of quality of health care services. Given the limited research on this topic in developing countries and especially in Peru, this study was designed to explore patients' satisfaction, health workers' job satisfaction and their association in Callao city in Peru.

1.8 Study objectives

This study had three objectives. The first objective was to determine patients' satisfaction and health workers' job satisfaction in primary health care centers in Callao, Peru. The second objective was to examine the association between patients' satisfaction and health workers' job satisfaction. The third one was to explore the predictors of health workers' job satisfaction in primary health care centers.

For the second objective, it is hypothesized that a higher job satisfaction of health workers will be associated with patients' higher satisfaction with health care services.

1.9 Conceptual framework

Figure 2 shows the conceptual framework of this study. Patient's satisfaction can be affected by several factors. They include patients' characteristics such as age [21-24],

sex [22], education level [25], overall health status [25-29]; health services characteristics such as duration of appointment [31], waiting time [27,33] payment for services [83,84]; and job satisfaction of health workers [56-60].

To improve patients' satisfaction it is imperative to also improve health workers job satisfaction [56-60]. Previous research has found that satisfied employees have better job performance [55]. Job satisfaction affects attitudes and behaviors of health workers towards patients, which in turn may affect patients' perception of the service received [56-58].

Job satisfaction of health workers can be affected by health workers' characteristics including age, sex, education level, marital status and work experience; job characteristics such as type of health worker, type of contract [52], administrative duties [53], and workload [49]; and dual practice of health workers.

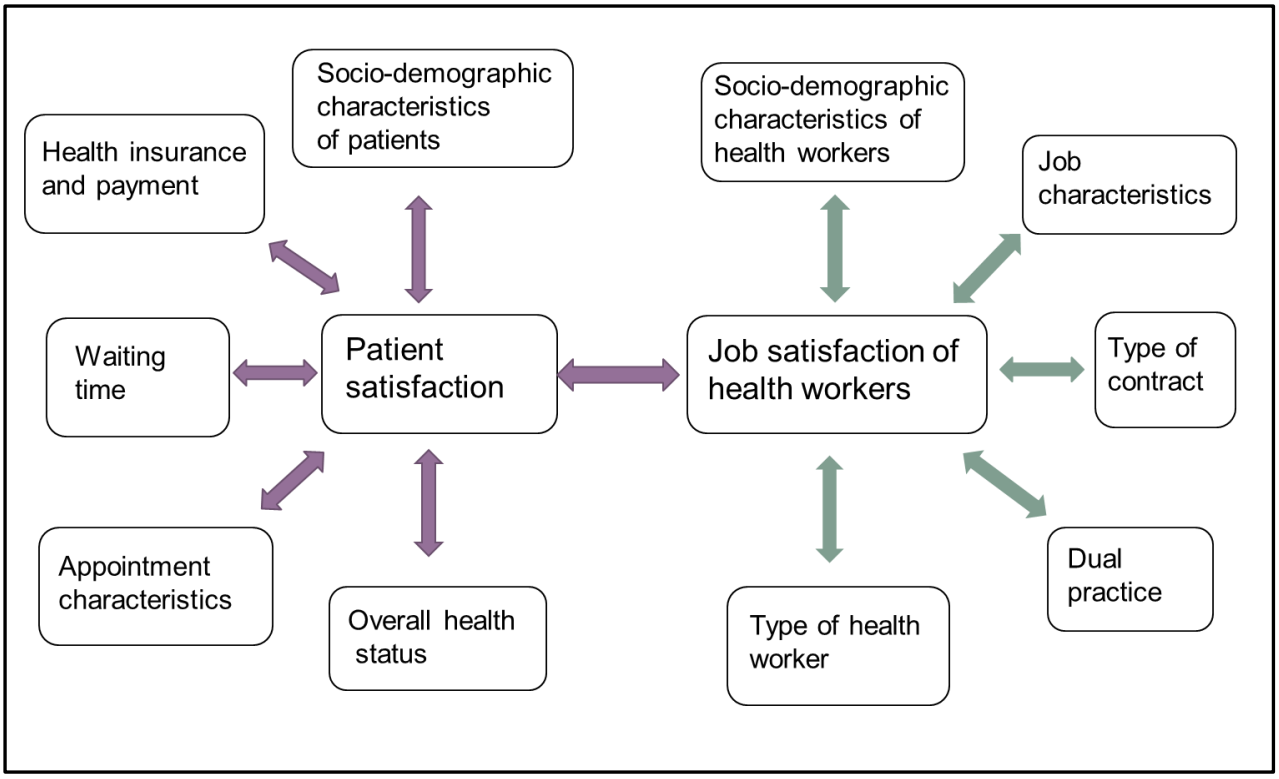

Figure 2. Conceptual framework of patients' satisfaction and health workers' job satisfaction

2. METHODS

2.1. Study design and settings

This cross-sectional study was conducted among patients and health workers of primary health care centers (PHCCs) in Callao, Peru. Data was collected between June-July 2013.

Callao is one of the 25 regions of Peru. It is located in the central coastal area of Peru and surrounded by Lima province, and is west to Lima city, the capital of Peru. It is considered as part of the Metropolitan area of Lima, a large city that holds almost one third of Peru's population (Appendix 1). The population of Callao was estimated to be 876,877 in 2007, and it is the highest populated region with a density of 5774 inhabitants/km^2 [85].

Public health facilities under the MoH are divided into three levels of care according to the services they provide. The services provided depend on the availability and qualifications of health workers, infrastructure, technological equipments, and on the health needs of the population [86]. Each level of care is sub-divided into categories of health facilities, which range from health posts (category I-1) to specialized institutions (category III-2) (Appendix 2).

PHCCs belong to the first level of care. This level is further sub-divided into four categories. Category I-1 centers are health posts that offer community and environmental health services alongside health promotion activities. Medical doctors are not part of the staff in this level. A technical nurse usually runs this category health center. Category I-2 centers are health posts that offer outpatient general medicine, midwife services (antenatal care, family planning and cervix cancer screening), immunizations, monitoring of child

growth and development, emergency room services, and tuberculosis treatment. The health management team in this category includes at least a medical doctor, a nurse, a midwife and a technical nurse [86].

Category I-3 and I-4 are health centers that offer a higher level of care. Category I-3 health centers offer all the services provided by the category I-2 centers plus laboratory and x-ray services. The health management team in this category includes at least a medical doctor, a nurse, a midwife, a technical nurse, a dentist, a laboratory technician, and a statistics technician. Category I-4 health centers offer all services provided by category I-3 centers plus 24 hour emergency care service, hospitalization, and maternity ward services. The health management team in this category has the same cadres as in the category I-3 centers, and additionally may have a pediatrician and a gynecologist [86].

Callao region has a total of 47 PHCCs. Out of 47, 33 belongs to category I-2; 9 to category I-3; and 5 to category I-4. None of the PHCCs in this region belongs to category I-1 [87] (Appendix 3).

2.2. Participants

Participants of this study included patients who attended the PHCCs and their health care workers. For the patients, the inclusion criteria were patients who were receiving medical attention at the outpatient services of the PHCCs; who were 18 years old or older; who were able to communicate in Spanish; and those who voluntarily accepted to participate in the study and signed the informed consent form. An exclusion criterion was those who had any mental or physical disease that did not allow the patient to follow the interview.

Health workers included in this study were those who worked as health care professionals, technical or administrative staff members in the PHCCs. The inclusion criteria were: those who had been working at least 6 months in the PHCC and voluntarily accepted to participate in the study. Health workers who were on leave, not available, or refuse to participate in this study, were excluded.

2.3. Sampling method and sample size

2.3.1. Sampling method of health centers and target population

A convenient sampling method was employed to select the PHCCs. Initial plan was to include all 47 PHCCs in this study. However, three PHCCs were dropped due to difficulty in access and insecurity of the area. After finishing data collection in 21 PHCCs, a medical strike halted further data collection. During the medical strike the outpatient services of all PHCCs were closed, and could not have access to patients or health workers of the remaining 23 PHCCs. This study was therefore conducted in 21 PHCCs out of the 44 potential PHCCs. Out of the 21 PHCCs included in this study, 15 belong to category I-2 centers, 4 to category I-3 centers and 2 to category I-4 centers (Figure 3).

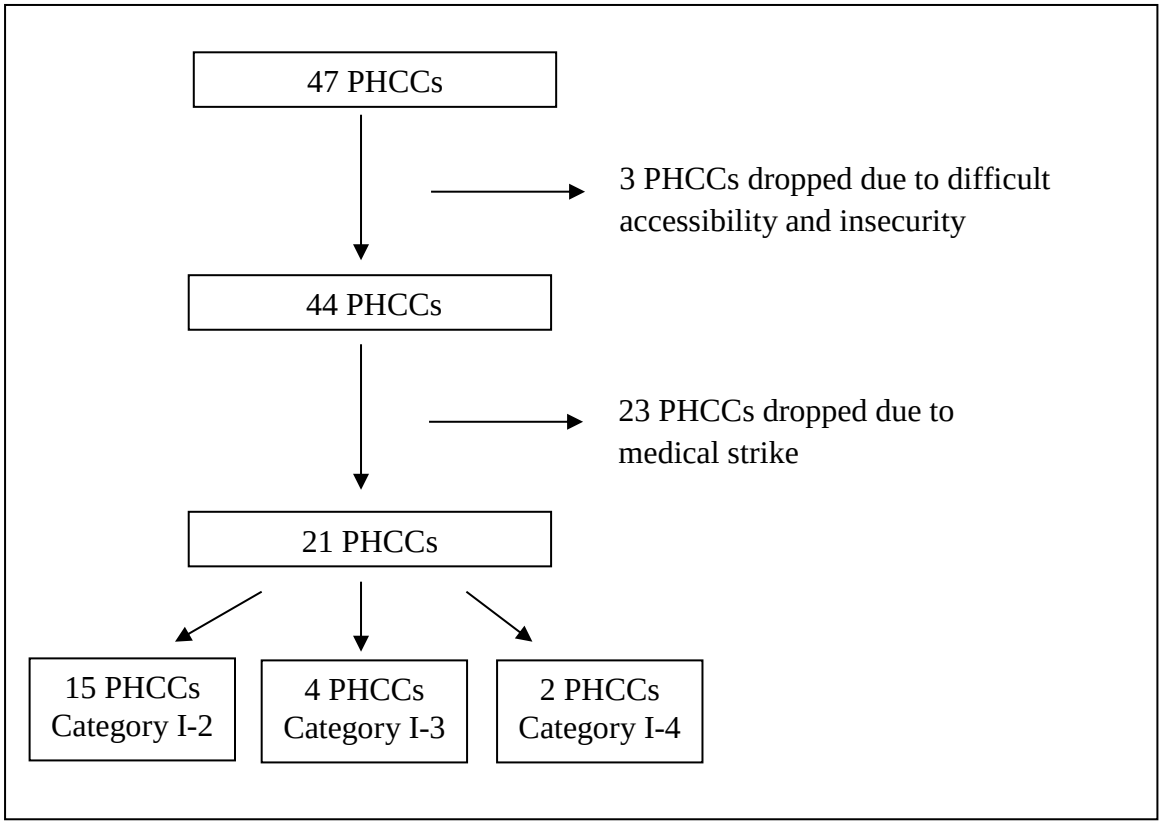

Figure 3: Sampling of primary health care centers

The patients were selected at the outpatient services of the selected PHCCs using a simple random sampling method. At each PHCC, the patients regularly receive a numbered ticket depending on the health service they seek (eg. Medicine, Midwifery, Dentistry, Psychology), at least one hour before the outpatient services start. The numbered ticket indicates the order in which the patients will be attended. Due to a high number of patients for the outpatient services, all the numbered tickets are distributed before the start of the outpatient service. A sampling frame was created using a list of patients who received the ticket numbers. The number of patients attending each day to the PHCCs varied. Out of the total of patients who received a ticket each day, 20% were

randomly selected by lottery method to meet the sample size as shown below. Each PHCC was visited daily until its calculated sample size was reached (Appendix 3).

All the health workers who fulfilled the inclusion criteria in each of the selected PHCCs were included in the study.

2.3.2 Sample size

For the patient-participants, the minimum required sample size was calculated for each of the PHCCs using the following formula:

$$n = \frac{z^2 pq N}{e^2 (N-1) + z^2 pq}$$

For this formula, the following assumptions were used: standard error (e) of 0.1, a 95% confidence interval (z = 1.96) and 76% of patient satisfaction according to a previous study in Peru (p = 0.76; q = 0.24) [78]. N is the total number of patients seen in the previous six months in the PHCCs. Therefore, a total of 1,444 patients were required as the minimum sample size (Appendix 4). Sample size was intentionally increased by 30% to counteract the effect of missing information and/or patient's refusal to participate in this study. A total of 2,141 patients were approached and asked for their participation. Among them, 557 patients (26%) refused to participate and 28 patients were dropped from the analysis due to missing data (Figure 4). The main reasons of refusal to participate in this

study were the lack of time to answer the questionnaire (205 patients), having to take care of their children (158 patients), and not interested in participating (194 patients).

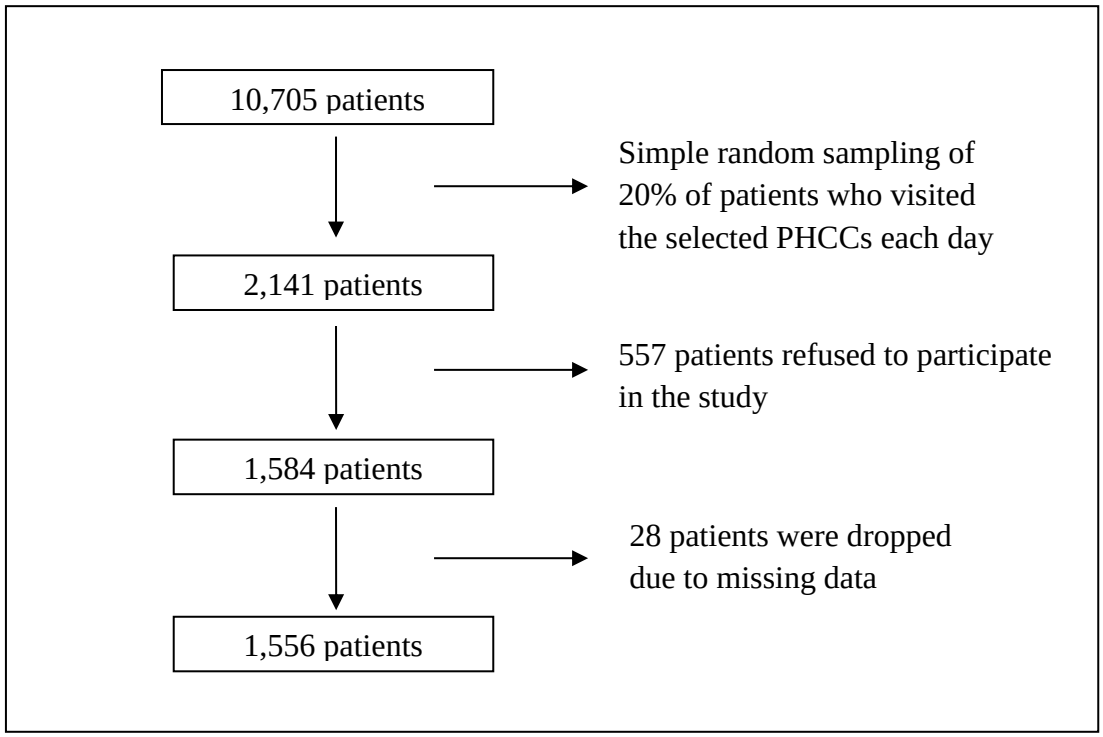

Figure 4: Selection of patient-participants who were included in the analysis

For health workers-participants the minimum required sample size was calculated using the same formula as for patients. The following assumptions were used: standard error (e) of 0.05, a 95% confidence interval (z = 1.96) and 26% of job satisfaction among health workers according to a previous study in Peru (p = 0.26; q = 0.74) [81]. N is the total number of health workers in the selected 21 PHCCs (N = 555). Therefore; a total of 194 health workers were required as the minimum sample size. To increase the power of the results, all health workers who fulfilled the inclusion criteria were included for data analysis. Research assistants approached all the health workers who were in each of the PHCCs during the data collection period. A total of 406 health workers were available in

the selected PHCCs during the study period. Twenty seven per cent of the health workers were not available to participate in this study. This is because during the study period, they were on holidays, absent or attending meetings outside of the health center in the days the PHCCs were visited. Out of 406, a total of 363 health workers accepted to answer the questionnaire (Figure 5). Rejection rate was 10.6%, and the main reasons to refuse participation were the lack of time (31 health workers) and lack of interest in collaborating with the study (12 health workers).

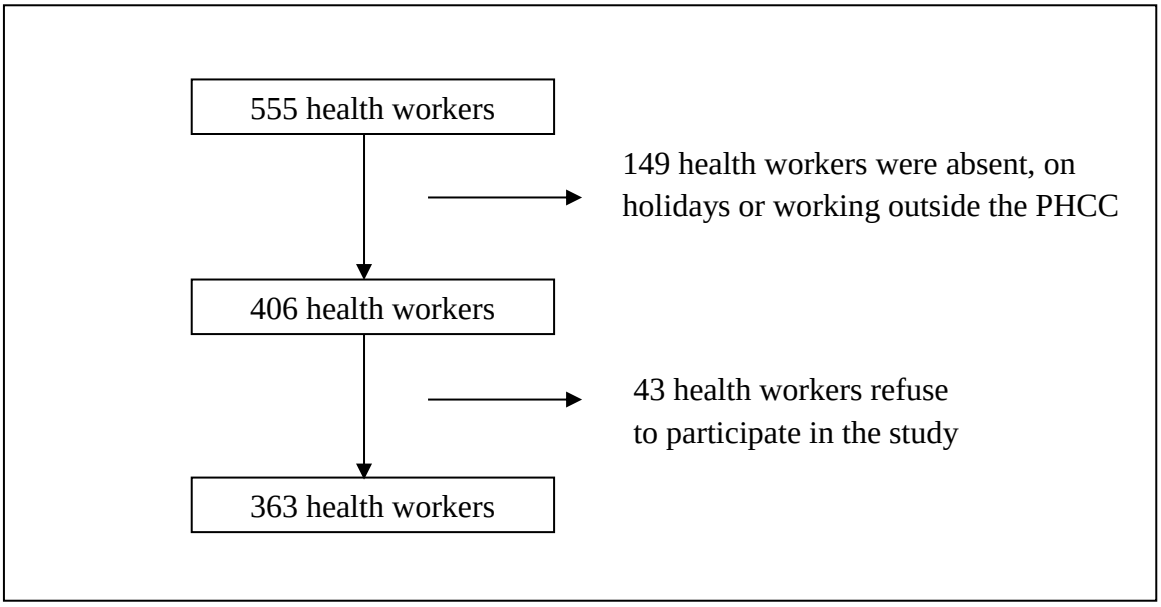

Figure 5: Selection of health workers-participants who were included in the analysis

2.4. Material development and data collection procedure

Two structured questionnaires were developed in Spanish. One questionnaire was for patients and the other one for health workers. Patients' questionnaire included socio-

demographic information, overall health status, health insurance information, waiting time and patient satisfaction questions. Patients' satisfaction was measured using the Service Quality (SERVQUAL) instrument. The SERVQUAL instrument assesses customer perceptions and expectations of service quality [88] and has been widely tested and adapted for health care services [89,90]. This instrument has been applied in hospital settings of Latin-American countries such as Chile [91] and Peru [79]. In total, the structured questionnaire consisted of 69 questions. Pre-test was conducted among 80 patients who sought for health care services in one of the PHCCs in Callao region. After checking for clarity and readability, the question regarding income was modified, and patients were asked for their monthly family income.

The questionnaire was administered through a face-to-face interview by five research assistants who had received one-week training. Training consisted of explanation about the content and procedure of the questionnaire, informed consent and confidentiality of the information. Patients were approached in the waiting room, before their medical appointment. The objectives and procedure of the study were explained to them. If they agreed to participate in the study and signed the informed consent form, the first part of the interview was conducted (until the "expectations" section of the SERVQUAL instrument). After the patient finished his/her medical appointment, they were approached again to finish the interview on the "perceptions" section of the SERVQUAL instrument. In total, the interview lasted for 20-25 minutes. All interviews were conducted in the waiting rooms of the PHCCs.

Health workers' questionnaire included socio-demographic characteristics, job information and job satisfaction questions. In total, the questionnaire consisted of 40 questions. Pre-test was conducted among 20 health workers to check for readability and

clarity. Data was collected using a self-administered questionnaire. The research assistant approached the health workers at their working site and explained the objectives of the study and requested their participation. If they agreed, they were handed the self-administered questionnaires and requested to return them to the research assistant by the end of the working day. The research team visited each PHCC for the second time to hand in the questionnaire to the available health workers who were absent during the first visit. On each visit, at least one member of the research team was available at the PHCC to answer questions and clear any doubts regarding the questionnaire. Health workers took 15-20 minutes to answer the questionnaire.

2.5. Measurements for patient's satisfaction

2.5.1 Outcome variable: patient satisfaction

The outcome variable was measured using SERVQUAL instrument. This instrument consists of 22 paired statements that measure patient's expectation and perception of the health care service received. It comprises five domains of service quality: tangibles (4 items), reliability (5 items), responsiveness (4 items), assurance (4 items) and empathy (5 items). Tangibles refer to the physical characteristics of the equipment, facilities and personnel. Reliability is the capability to provide the promised service thoroughly and accurately. Responsiveness is the eagerness to help patients and to provide them with a timely service. Assurance is the ability to show courtesy and to convey credibility, trust and confidence. Empathy is the ability to show compassion towards the patients and understanding their needs [88].

Statements are evaluated using a 7 point level Likert scale ranging from “strongly disagree” (value 1) to “strongly agree” (value 7). The score of quality of service is calculated by summing the difference between the perception and the expectation scores of each of the statements. Patients are satisfied with the health service if the gap between perceptions and expectations is ≥ 0, and are dissatisfied if this score is < 0.

The statements of the SERVQUAL instrument have been validated for the PHCCs’ environment in Peru by the Ministry of Health [92]. This instrument is currently used for quality control in all PHCCs once a year. The internal consistency reliability of the scale in this study had a Cronbach’s alpha = 0.89.

2.5.2. Independent variables

2.5.2.1 Socio-demographic characteristics of patients

Socio-demographic characteristics of patients were collected. Such characteristics included age, sex, education, civil status, income-generating activity and monthly family food basket information. Education was categorized into “0 = none”, “1= primary”, “2 = secondary” and “3 = higher”. Civil status was categorized into “0 = single”, “1 = married/cohabit relationship” and “2 = widow/divorced”. Income-generating activity was asked to patients if they currently have a job or not. Patients were also asked about ownership of their living accommodation. Monthly family income was treated as a continuous variable.

2.5.2.2 Overall health status of patients

Health status of patients was measured using the self-rated health (SRH) [93]. SRH is a single item indicator of self-perceived morbidity in which patients are asked “How do you rate your health?” and answers are categorized as “0 = Very good”, “1 = Good”, “2 =

Moderate", "3 = Poor" or "4 = Very poor". For analysis, this variable was re-categorized into 3 categories, merging "very good and good", and "poor and very poor". The three categories are "0 = Poor", "1 = Regular" and "2 = Good".

2.5.2.3 Health insurance

Patients were asked if they had any type of health insurance. If they answered "yes", they were further asked about the type of health insurance. Answers were categorized as "0 = comprehensive health insurance", "1 = social health insurance" and "2 = private health insurance". Finally, they were asked if they had used their health insurance on the day of the interview to receive medical attention.

2.5.2.4 Pay for medical services

Patients were asked if they had to make a direct payment in cash for the medical services they received at the PHCC. This included all services provided by the PHCC such as medical appointment and laboratory tests, but did not include the pharmacy services with the provision of medicines.

2.5.2.5 Visit to PHCC

Patients were asked if this was their first visit to the PHCC or if they had used the medical services previously.

2.5.2.5 Visit to the PHCC for current medical problem

Patients were asked if this was the first time they were seeking health care services for their current medical condition, or if they were having a follow-up appointment.

2.5.2.6 Waiting time

Waiting time was measured by asking patients “How was the waiting time?”. Answers were categorized as “0 = Long”, “1 = Normal” or “2 = Short”.

To have an objective waiting time, patients were also asked at what time they arrived at the PHCC, and research assistants recorded at what time the patient enter the medical office. Waiting time was measured as continuous variable in minutes.

2.5.2.7 Duration of appointment

Research assistants recorded the duration of the appointment of each patient, and this was measured as a continuous variable in minutes.

2.5.2.8 Appointment with health care professional

Patients were asked which medical service they were seeking and with whom they had their appointment. Answers were categorized as “0 = other”, “1= physician”, “2 = midwife”, “3 = dentist”. Psychologist, nutritionist and nurse were included in the “other” category.

2.6 Measurements for health workers’ job satisfaction

2.6.1 Outcome variable: health worker’s job satisfaction

Job satisfaction is defined as the extent to which people like (satisfaction) or dislike (dissatisfaction) their jobs [94]. In this study, job satisfaction was measured using the SL-SPC scale [95]. This scale has 27 items and analyzes four domains: meaning of the task (8 items), working conditions (9 items), personal and/or social acknowledgement (5 items) and economic benefits (5 items). Statements are evaluated using a 5 point level Likert

scale ranging from “strongly satisfied” (value 5) to “strongly dissatisfied” (value 1). The total SL-SPC score was the sum of the 27 items, with range from 27 to 135. A higher score indicated a higher level of satisfaction, and a health worker with a total score of 103 or above would be classified as satisfied with their job. The scores of the scale are classified into five categories: “Strongly satisfied, Satisfied, Average, Dissatisfied and Strongly dissatisfied”. For the analysis, the scores of the scale were re-classified into three categories “0 = Dissatisfied” (merger of strongly dissatisfied and dissatisfied category), “1 = Average” and “2 = Satisfied” (merger of strongly satisfied and satisfied category) using the original cut-off points developed by Palma (Appendix 5). The SL-SPC scale was developed and validated in Lima, Peru [95]. The internal consistency reliability of the scale in this study had a Cronbach’s alpha = 0.75

2.6.2 Independent variables

2.6.2.1 Socio-demographic characteristics of health workers

Socio-demographic characteristics included were age, sex, education, civil status. Education was categorized into “0 = secondary”, “1= technical”, “2 = university” and “3 = post-graduate”. Health workers were also asked the total number of years of education, and this variable was used as a continuous variable. Civil status was categorized into “0 = single”, “1 = married/cohabit” and “2 = widowed / divorced”.

2.6.2.2 Types of health workers

Health workers were categorized as “0 = administrative staff”, “1= technical medical staff” or “2 = health care professional”. Technical medical staffs were technical nurse, auxiliary nurse, laboratory technician and x-ray technician. Health care professionals were physicians, midwives, dentists, psychologist, nutritionist and nurses. All other health

workers were considered administrative staff, these included secretary, admission clerk, pharmacy clerk, logistic staff, archive staff, social worker and security. HRH department at the Callao Regional Health Directorate recommended the categorization of health workers in these three categories.

2.6.2.3 Type of contract

The type of contract of the health workers was categorized as "0 = permanent contract", "1 = contract for services" and "2 = Third party contract". A permanent contract is an indefinite contract and includes benefits such as 1 month paid holidays, enrollment in the social health insurance and a retirement fund. Contract for services is a contract that is renewed each year, health workers under this type of contract have 15 days of paid holidays per year, are enrolled in the social health insurance and in a retirement fund. Third party contract is renewed monthly and workers do not receive any kind of benefits [96,97].

2.6.2.4 Administrative duties

Health workers were asked if they performed administrative duties as part of their job description.

2.6.2.5 Dual practice

Dual practice is defined as holding more than one job in the health care sector. It may encompass working in different aspects of health or combining health related activities such as clinical practice with research [98]. In this study, dual practice refers to health workers engaged in work in both the public and the private sector [98]. Health workers were asked if they had a job in the private health care sector beside their job at the PHCC.

2.6.2.6 Working hours per week

Health workers were asked the number of hours they worked per day and the number of days per week. For analysis, it was treated as a continuous variable.

2.6.2.7 Years working in the health sector

Health workers were asked the number of months and years they had been working in the health sector. For analysis, it was treated as a continuous variable.

2.6.2.8 Years working in the PHCC

Health workers were asked the number of months and years they had been working at the PHCC. For analysis, it was treated as a continuous variable.

2.7. Data analysis

After data collection, data was coded and entered into a database. A descriptive analysis was conducted to examine the socio-demographic characteristics, health status and health care utilization characteristics of patients; as well as the socio-demographic and job characteristics of health workers. For continuous variables, median, standard deviations, skewness and kurtosis were calculated. For categorical variables, frequency tables were examined. The characteristics of patients were stratified by satisfaction, and the characteristics of health workers were stratified by sex, conducting chi-square test for categorical variables and independent sample t-test for continuous variables.

Patient satisfaction was analyzed by summing the gap scores for each of the items, using the following equation:

$$Q = \sum_{X=1}^{22} (Px - Ex)/22$$

For this formula, "Q" is the perceived service quality (patient satisfaction), "Px" is the value corresponding to the perception and "Ex" is the value corresponding to the expectation of each of the 22 statements of the SERVQUAL instrument [88] Patients were considered satisfied with the health services if the gap between perceptions and expectations was ≥ 0, and dissatisfied if this score was < 0. Overall patient satisfaction and satisfaction within each of the five domains of this instrument was calculated. SERVQUAL results were stratified by sex using chi-square test.

Overall job satisfaction and satisfaction within each of the four domains were stratified by type of health worker using chi-square test.

Bivariate logistic regression analyses were performed to examine the relationship between patients' satisfaction and covariates and confounders. Bivariate ordinal logistic regression analyses were carried out to evaluate the relationship between health workers' job satisfaction and other important covariates and confounders. Then, multiple regression analyses were carried out. The covariates and confounding variables included in both models were those associated with patients's satisfaction and health workers' job satisfaction, respectively, at a $p \leq 0.2$. Gender and age were included in the models independently of their bivariate regression analysis results because of their important association with the outcome variables based on previous studies [21,22,26,77]. For the patient satisfaction's model, health workers' job satisfaction as a predictor variable, was

also included independently of its bivariate regression analysis result because it was the main predictor to study and one of the objectives of this research.

Multicollinearity diagnostics was conducted for all models. Variance inflation factors (VIFs) were low for both patient's satisfaction (< 2) and job satisfaction factors (< 3). For patients' satisfaction, robust multiple logistic regression models clustered by PHCC were performed. In this model, the variable job satisfaction of health workers was the mean value of the job satisfaction scores of all health workers per PHCC. For health workers' job satisfaction, robust multiple ordinal logistics regression models clustered by PHCCs were performed and marginal effects for the satisfaction category were calculated. All statistical analysis were evaluated as significant at the 95% confidence level ($p < 0.05$), and conducted using STATA version 11 for Windows (Stata corporation, College Station, TX).

2.8. Ethical consideration

This study was reviewed and approved by the Research Ethics Committee of The University of Tokyo and of the Callao Regional Health Directorate in Peru. Participation was voluntary and a written informed consent was obtained from all patients. Participants were explained that they could withdraw from the study at any time, without any harm or without affecting the health service they received. They were also free to skip any questions they did not wish to answer. Confidentiality of the information was ensured by removing all personal identifications from the questionnaire.

3. RESULTS

3.1 Patients' satisfaction

3.1.1 Patients' socio-demographic characteristics

Socio-demographic characteristics of 1,556 patients are shown in Table 1. Their mean age was 35.3 years (SD 12.9). Of all patients, 90.4% were females. Almost all patients had at least primary education level (98.5%) and 78.1% had a secondary education level or higher. Eighty five percent were married or had a cohabit relationship. Among all patients, 31% were currently working and 84.3% owned their living accommodations. The mean monthly family income was US$ 254.3 (SD 55.7).

Nearly 40% of female patients were satisfied with the health services received in the PHCCs compared to 26.7% of male patients (p = 0.004).

Table 1. Socio-demographic characteristics of patients

Characteristics N (%)	Total 1,556 (100)	Patient satisfaction		*p*-value*
		Satisfied 583 (37.5)	Dissatisfied 973 (62.5)	
Age				
Mean (SD)	35.3 (12.9)	35.2 (12.7)	35.3 (13.1)	0.806
Sex				
Female	1406 (90.4)	543 (92.6)	863 (88.7)	**0.004**
Male	150 (9.6)	40 (7.4)	110 (11.3)	
Education				
No education	23 (1.5)	9 (1.5)	14 (1.4)	0.057
Primary	317 (20.4)	111 (19.0)	206 (21.2)	
Secondary	987 (63.4)	359 (61.6)	628 (64.5)	
Higher	229 (14.7)	104 (17.8)	125 (12.9)	

Marital status				
Single	180 (11.6)	65 (11.2)	115 (11.8)	0.210
Married/Cohabit	1,332 (85.6)	496 (85.1)	836 (85.9)	
Divorced/widow	44 (2.8)	22 (3.8)	22 (2.3)	
Working status				
Currently working	482 (31.0)	173 (29.7)	309 (31.8)	0.390
Not working	1074 (69.0)	410 (70.3)	664 (68.2)	
Living accommodation				
Owner	1,311 (84.3)	494 (84.7)	817 (84.0)	0.688
Rent	245 (15.8)	89 (15.3)	156 (16.0)	
Monthly family income				
Mean (SD) US$	254.2 (55.8)	256.9 (63.1)	254.2 (51.0)	0.347

* Independent sample t-test for continuous variables and chi-square for categorical variables

3.1.2 Patients' health status and health care utilization characteristics

Overall health status and health care utilization characteristics of patients are presented in Table 2. Fifty percent of 1,556 patients self-rated their health status as regular, while only 12.4% rated it as poor. More than 90% of patients had some kind of health insurance. Among them, 91.6% had the CHI which allows for free medical treatment in the PHCCs. However, out of all patients who had a CHI, 7.7% did not used it when visiting the PHCCs. Out of all 1,556 patients, 21.3% paid for the medical services received at the PHCCs.

Most patients had previously visited the PHCC. Only for 4.2% of patients, it was their first visit to the PHCC. Nearly 90% of patients were visiting the PHCC for a follow-up appointment. Only for 12.1% of patients, it was their first visit to a medical facility for their current medical problem. Subjective waiting time was long for 58.9% of the patients, with the mean waiting time of 170.3 minutes (SD 74.8). The mean

duration of the appointment was 14.8 minutes (SD 6.7) and 45.9% were seen by a physician.

About 15% of patients who were satisfied with health services had a self-rated bad health status compared to 10.7% of patients who were dissatisfied with them (p = 0.030). Among those who had any type of health insurance, 94.9% were satisfied with the medical services provided and 91.9% were dissatisfied with the quality of health services (p = 0.026). Among those who used their CHI during their visit to the PHCCs, 94.6% were satisfied with the health services and 90.9% were dissatisfied with the services received (p = 0.014). About 25% of dissatisfied patients paid for the medical services they received at the PHCCs compared to 16.5% satisfied patients with the health services (p < 0.001). Five percent of dissatisfied and 2.9% of satisfied patients were new patients to the PHCCs (p = 0.045). For their current medical problems, 8.4% of satisfied and 14.3% of dissatisfied patients were visiting the PHCCs for the first time (p < 0.001). Duration of the appointment was 15.3 (SD 7.2) minutes for satisfied patients and 14.5 (SD 6.4) minutes for dissatisfied patients with the medical services received (p = 0.020).

Table 2. Health and health utilization characteristics of patients

Characteristics N (%)	Total	**Patient satisfaction**		*p*-value*
	1,556 (100)	Satisfied	Dissatisfied	
		583 (37.5)	973 (62.5)	
Self-rated health status				
Good	573 (36.8)	207 (35.5)	366 (37.6)	**0.030**
Regular	790 (50.8)	287 (49.2)	503 (51.7)	
Poor	193 (12.4)	89 (15.3)	104 (10.7)	

Health insurance				
Yes	1,447 (93.0)	553 (94.9)	894 (91.9)	**0.026**
No	109 (7.0)	30 (5.1)	79 (8.1)	
Type of health insurance[a]				
Comprehensive health insurance	1,325 (91.6)	515 (93.1)	810 (90.6)	0.242
Social health insurance	113 (7.8)	35 (6.3)	78 (8.7)	
Private health insurance	9 (0.6)	3 (0.5)	6 (0.7)	
Use of health insurance during visit[b]				
Yes	1,224 (92.3)	487 (94.6)	737 (90.9)	**0.014**
No	102 (7.7)	28 (5.4)	74 (9.1)	
Pay for medical services				
Yes	332 (21.3)	96 (16.5)	236 (24.3)	< **0.001**
No	1,224 (78.7)	487 (83.5)	737 (75.7)	
First visit to PHCC				
Yes	66 (4.2)	17 (2.9)	49 (5.0)	**0.045**
No	1,490 (95.8)	566 (97.1)	924 (95.0)	
First visit for current medical problem				
Yes	188 (12.1)	49 (8.4)	139 (14.3)	< **0.001**
No	1,368 (87.9)	534 (91.6)	834 (85.7)	
Subjective waiting time				
Short	42 (2.7)	18 (3.1)	24 (2.5)	0.174
Normal	598 (38.4)	239 (41.0)	359 (36.9)	
Long	916 (58.9)	326 (55.9)	590 (60.6)	
Waiting time				
Mean (SD) minutes	170.3 (74.8)	174.6 (80.2)	167.7 (71.3)	0.079
Duration of appointment				
Mean (SD) minutes	14.8 (6.7)	15.3 (7.2)	14.5 (6.4)	**0.020**
Seen by				
Physician	714 (45.9)	268 (46.0)	446 (45.8)	0.103
Midwife	564 (36.3)	203 (34.8)	361 (37.1)	
Dentist	182 (11.7)	65 (11.2)	117 (12.0)	
Other	96 (6.2)	47 (8.0)	49 (5.1)	

* Independent sample t-test for continuous variables and chi-square for categorical variables

[a] N = 1,456, as 109 patients did not have any type of health insurance

[b] N = 1,325, as 122 patients did not have the national health insurance

3.1.3 Patients' satisfaction: SERVQUAL results

Table 3 shows the results of the SERVQUAL instrument for patients' satisfaction. Overall, 37.5% of 1,556 patients were satisfied with the health services they received in the PHCCs. Within the 5 domains explored, 46.9 % of all patients were satisfied with the reliability domain; 46.7%, with the responsiveness domain; 75.6% with the assurance domain; 57.2%, with the empathy domain; and 44.0%, with the tangibles domain. Among the five domains, the highest dissatisfaction was observed in the tangibles domain (56.0%). The highest satisfaction was observed in the assurance domain for both female (75.9%) and male (73.3%) patients; while the highest dissatisfaction was observed in the tangibles domain for female patients (56.1%) and in the reliability domain for male patients (64.7%).

Between female and male patients, significant differences were observed in the overall patients' satisfaction. Of all patients, 38.6% of female and 26.7% of male patients were satisfied with the health services provided ($p = 0.004$). Within the five domains, difference between female and male patients were observed in the reliability domain, 48.2% of females and 35.5% of male patients were satisfied with this domain ($p = 0.003$). Responsiveness domain was also significantly different, 47.8% of female and 36.7% of male patients were satisfied with this domain ($p = 0.009$).

Table 3. Patient's satisfaction: Servqual instrument (N = 1,556)

	Total		Sex				*p*-value*
			Female		Male		
	Satisfied	Dissatisfied	Satisfied	Dissatisfied	Satisfied	Dissatisfied	
Patient's satisfaction	583 (37.5)	973 (62.5)	543 (38.6)	863 (61.4)	40 (26.7)	110 (73.3)	**0.004**
Domains							
Reliability	730 (46.9)	826 (53.1)	677 (48.2)	729 (51.8)	53 (35.3)	97 (64.7)	**0.003**
Responsiveness	727 (46.7)	829 (53.3)	672 (47.8)	734 (52.2)	55 (36.7)	95 (63.3)	**0.009**
Assurance	1177 (75.6)	379 (24.4)	1,067 (75.9)	339 (24.1)	110 (73.3)	40 (26.7)	0.488
Empathy	890 (57.2)	666 (42.8)	804 (57.2)	602 (42.8)	86 (57.3)	64 (42.7)	0.972
Tangibles	684 (44.0)	872 (56.0)	617 (43.9)	789 (56.1)	67 (44.7)	83 (55.3)	0.854

*Chi-square test

3.1.4 Factors associated with overall patients' satisfaction

Table 4 shows the results of the robust multiple logistic regression for overall patients' satisfaction. In this model, patients who expressed a subjective short waiting time were nearly twice as likely to be satisfied with the quality of the medical services (AOR = 1.88, 95% CI 1.16 – 3.05); while those who considered their waiting time as normal, were 1.5 times more likely to be satisfied with health care services (AOR = 1.50, 95% CI 1.15 – 1.94) compared to those who expressed their waiting time was long. Patients who were visiting the health center for a follow-up appointment for their current medical problem were 1.7 times more likely to be satisfied with the service quality than those who were visiting for the first time (AOR = 1.66, 95% CI 1.15 – 2.39). Those patients who did not have to pay for the medical services were 1.5 times more likely to be satisfied with the health services received than those who had to make a payment (AOR = 1.45, 95% CI 1.07 – 1.95).

Self-rated health status and health care professional with whom patients had their appointment were negatively associated with patients' satisfaction. Patients who had a good self-rated health status were 1.6 times less likely to be satisfied with service quality compared to those who had a poor health status (AOR = 0.63, 95% CI 0.43 – 0.92). Those patients who were seen by a midwife (AOR = 0.56, 95% CI 0.36 – 0.87) or a dentist (AOR = 0.59, 95% CI 0.36 – 0.98) were 1.7 times less likely to be satisfied with the health services received compared to those who were seen by other health care professionals (psychologist, nutritionist, technical nurse or nurse) .

Table 4. Factors associated with overall patient's satisfaction: Multiple logistic regression (N = 1,556)

Covariates	AOR	95% CI	*p*-value
Age (years)	0.99	0.99 - 1.01	0.383
Gender			
Male	1		
Female	1.64	0.95 - 2.86	0.078
Civil status			
Single	1		
Married/ Live-in	0.98	0.68 - 1.42	0.918
Divorced/Widowed	1.43	0.67 - 3.08	0.356
Self-rated health status			
Poor	1.00		
Regular	0.70	0.48 - 1.03	0.076
Good	**0.63**	**0.43 - 0.92**	**0.019**
Subjective waiting time			
Long	1.00		
Normal	**1.50**	**1.15 - 1.94**	**0.002**
Short	**1.88**	**1.16 - 3.05**	**0.011**
Waiting time (minutes)	**1.002**	**1.001 - 1.004**	**0.002**
Duration of appointment (minutes)	1.02	0.99 - 1.04	0.122
1st visit for current medical problem			
Yes	1		
No	**1.66**	**1.15 - 2.39**	**0.007**
Pay for medical services			
Yes	1		
No	**1.45**	**1.07 - 1.95**	**0.016**
Seen by			
Other[a]	1		
Physician	0.64	0.37 - 1.09	0.102
Midwife	**0.57**	**0.37 - 0.87**	**0.009**
Dentist	**0.59**	**0.36 - 0.98**	**0.041**

Job satisfaction of health workers[b]	1.01	0.98 - 1.05	0.428

AOR = Adjusted odds ratio; CI = confidence interval

[a] Other includes: psychologist, nutritionist, nurse and technical nurse

[b] N = 363

3.1.5 Factors associated with satisfaction of SERVQUAL domains

Table 5 shows the results of the robust multiple logistic regressions for the reliability domain of SERVQUAL. In this model, patients who had at least primary education were 2.4 times more likely to be satisfied with the reliability domain (AOR 2.44, 95% CI 1.01 – 5.87); while those who had higher education were more than three times more likely to be satisfied with the reliability domain compared to those patients with no formal education (AOR = 3.26, 95% CI 1.22 – 8.70). Patients who were visiting the health center for a follow-up appointment for their current medical problem were nearly twice as likely to be satisfied with the reliability domain as those who were visiting for the first time (AOR = 1.82, 95% CI 1.25 – 2.63). Those patients who did not have to pay for the medical services were 1.5 times more likely to be satisfied with the reliability domain than those who had to make a payment (AOR = 1.46, 95% CI 1.09 – 1.95).

Table 5. Factors associated with reliability domain of patient's satisfaction: Multiple logistic regression (N = 1,556)

Covariates	AOR	95% CI	*p*-value
Age (years)	0.99	0.99 - 1.01	0.983
Gender			
Male	1		
Female	1.45	0.97 - 2.17	0.071
Education			
No education	1		
Primary	**2.44**	**1.01 - 5.87**	**0.047**
Secondary	2.25	0.89 - 5.71	0.087
Higher	**3.26**	**1.22 - 8.70**	**0.018**
Ownership of living accommodation			
No	1		
Yes	0.76	0.55 - 1.04	0.090
1st visit to PHCC			
Yes	1		
No	0.75	0.44 - 1.28	0.287
1st visit for current medical problem			
Yes	1		
No	**1.82**	**1.25 - 2.63**	**0.002**
Pay for medical services			
Yes	1		
No	**1.46**	**1.09 - 1.95**	**0.011**
Job satisfaction of health workers[a]	0.99	0.93 - 1.06	0.878

AOR = Adjusted odds ratio; CI = confidence interval

[a]N = 363

Table 6 shows the results of the robust multiple logistic regression for the responsiveness domain of SERVQUAL. In this model, patients who did not have to pay for their medical services were 1.6 times more likely to be satisfied with this domain than those who had to make a payment (AOR = 1.62, 95% CI 1.37 – 1.93).

Table 6. Factors associated with responsiveness domain of patient's satisfaction: Multiple logistic regression (N = 1,556)

Covariates	AOR	95% CI	*p*-value
Age (years)	0.99	0.99 - 1.01	0.764
Gender			
Male	1		
Female	1.49	0.95 - 2.31	0.080
Subjective waiting time			
Long	1.00		
Normal	1.24	0.95 - 1.61	0.107
Short	0.74	0.41 - 1.36	0.338
Waiting time (minutes)	1.002	0.99 - 1.003	0.068
Duration of appointment (minutes)	1.01	0.99 - 1.03	0.373
1st visit to PHCC			
Yes	1		
No	1.09	0.67 - 1.76	0.734
1st visit for current medical problem			
Yes	1		
No	1.15	0.81 - 1.66	0.441
Pay for medical services			
Yes	1		
No	**1.62**	**1.37 - 1.93**	**< 0.001**

Seen by			
Other[a]	1		
Physician	0.75	0.46 - 1.23	0.238
Midwife	0.70	0.48 - 1.01	0.060
Dentist	0.87	0.51 - 1.45	0.612
Job satisfaction of health workers[b]	0.99	0.94 - 1.06	0.926

AOR = Adjusted odds ratio; CI = confidence interval

[a] Other includes: psychologist, nutritionist, nurse and technical nurse

[b] N = 363

Table 7 shows the results of the robust multiple logistic regressions for the assurance domain of SERVQUAL. Patients who did not have a job were 1.3 times more satisfied with the assurance domain than those patients who were currently working (AOR = 1.32, 95% CI 1.01 – 1.75). Patients who had a regular self-rated health status were 1.4 times more likely to be satisfied with the assurance domain (AOR = 1.37, 95% CI 1.01 – 1.86); while those who had a good self-rated health status were twice as likely to be satisfied with the assurance domain (AOR = 2.16, 95% CI 1.47 – 3.14) compared to those who had a poor self-rated health status. Patients who expressed a subjective normal waiting time were nearly twice as likely to be satisfied with the assurance domain as those who expressed their waiting time was long (AOR = 1.80, 95% CI 1.36 – 2.38). Patients who experienced a longer duration of their appointment were more likely to be satisfied with the assurance domain (AOR 1.05, 95% CI 1.02 – 1.08).

Patients who were visiting the health center for a follow-up appointment for their current medical problem were 1.6 times more likely to be satisfied with the assurance domain than those who were visiting for the first time (AOR = 1.62, 95% CI 1.07 – 2.46). PHCCs which had a higher mean score of health workers' job satisfaction were

more likely to have patients satisfied with the assurance domain (AOR = 1.05, 95% CI 1.01 – 1.10).

Table 7. Factors associated with assurance domain of patient's satisfaction: Multiple logistic regression (N = 1,556)

Covariates	AOR	95% CI	*p*-value
Age (years)	1.00	0.99 - 1.02	0.541
Gender			
Male	1		
Female	1.20	0.78 - 1.84	0.400
Education			
No education	1		
Primary	0.74	0.30 - 1.81	0.509
Secondary	1.14	0.45 - 2.88	0.775
Higher	0.97	0.36 - 2.59	0.948
Civil status			
Single	1		
Divorced/ Widow	1.18	0.80 - 1.75	0.409
Married/ Live-in	0.84	0.41 - 1.77	0.661
Working status			
Currently working	1		
Not working	**1.32**	**1.01 - 1.75**	**0.049**
Monthly family income (US$)	1.00	0.99 - 1.004	0.257
Self-rated health status			
Poor	1.00		
Regular	**1.37**	**1.01 - 1.86**	**0.041**
Good	**2.16**	**1.47 - 3.14**	**< 0.001**

Subjective waiting time			
Long	1.00		
Normal	**1.80**	**1.36 - 2.38**	**< 0.001**
Short	2.16	0.90 - 5.19	0.084
Duration of appointment (minutes)	**1.05**	**1.02 - 1.08**	**0.001**
1st visit to PHCC			
Yes	1		
No	1.38	0.80 - 2.38	0.243
1st visit for current medical problem			
Yes	1		
No	**1.62**	**1.07 - 2.46**	**0.023**
Seen by			
Other[a]	1		
Physician	1.48	0.81 - 2.66	0.200
Midwife	1.31	0.85 - 2.0.4	0.224
Dentist	1.09	0.55 - 2.18	0.781
Job satisfaction of health workers[b]	**1.05**	**1.01 - 1.10**	**0.015**

AOR = Adjusted odds ratio; CI = confidence interval
[a] Other includes: psychologist, nutritionist, nurse and technical nurse
[b] N = 363

Table 8 shows the results of the robust multiple logistic regressions for the empathy domain of SERVQUAL. Patients who had higher education were 2.4 times more likely to be satisfied with the empathy domain compared to those patients with no formal education (AOR = 2.39, 95% CI 1.11 – 5.19). Patients who had a regular self-rated health status were 1.3 times less likely to be satisfied with the empathy domain compared to those with a poor self-rated health status (AOR = 0.80, 95% CI 0.65–0.99).

Patients who experienced a longer duration of their appointment were more likely to be satisfied with the empathy domain (AOR 1.01, 95% CI 1.001 – 1.03). Patients who were visiting the health center for a follow-up appointment for their current medical problem were 1.5 times more likely to be satisfied with the empathy domain compared to those who were visiting for the first time (AOR = 1.47, 95% CI 1.11 – 1.95). Those patients who did not have to pay for their medical services were 1.5 times more likely to be satisfied with this domain than those who had to make a payment (AOR = 1.47, 95% CI 1.18 – 1.84). PHCCs which had a higher mean score of health workers' job satisfaction were more likely to have patients satisfied with the empathy domain (AOR = 1.03, 95% CI 1.01 – 1.06).

Table 8. Factors associated with empathy domain of patient's satisfaction: Multiple logistic regression (N = 1,556)

Covariates	AOR	95% CI	*p*-value
Age (years)	0.99	0.98 - 1.01	0.754
Gender			
Male	1		
Female	0.8	0.54 - 1.18	0.265
Education			
No education	1		
Primary	2.03	0.84 - 4.88	0.115
Secondary	2.02	0.92 - 4.38	0.077
Higher	**2.39**	**1.11 - 5.19**	**0.026**
Working status			
Currently working	1		
Not working	0.89	0.76 - 1.05	0.160

Self-rated health status			
Poor	1		
Regular	**0.80**	**0.65 - 0.99**	**0.047**
Good	1.01	0.76 - 1.34	0.911
Duration of appointment (minutes)	**1.01**	**1.001 - 1.03**	**0.039**
Subjective waiting time			
Long	1		
Normal	1.24	0.98 - 1.57	0.072
Short	1.22	0.71 - 2.09	0.466
1st visit for current medical problem			
Yes	1		
No	**1.47**	**1.11 - 1.95**	**0.007**
Pay for medical services			
Yes	1		
No	**1.47**	**1.18 - 1.84**	**0.001**
Job satisfaction of health workers[a]	**1.03**	**1.01 - 1.06**	**0.006**

AOR = Adjusted odds ratio; CI = confidence interval

[a]N = 363

Table 9 shows the results of the robust multiple logistic regressions for the tangibles domain of SERVQUAL. Patients who had previously visited the PHCC were nearly 2.3 times more likely to be satisfied with the tangibles domain than those who were visiting the PHCC for the first time (AOR = 2.27, 95% CI 1.16 – 4.42).

Table 9. Factors associated with tangibles domain of patient's satisfaction: Multiple logistic regression (N = 1,556)

Covariates	AOR	95% CI	*p*-value
Age (years)	1.00	0.99 - 1.01	0.397
Gender			
Male	1		
Female	1.07	0.71 - 1.59	0.755
Working status			
Currently working	1		
Not working	1.20	0.96 - 1.51	0.105
Ownership of living accommodation			
No	1		
Yes	1.16	0.88 - 1.52	0.301
Subjective waiting time			
Long	1.00		
Normal	0.97	0.76 - 1.23	0.811
Short	0.61	0.34 - 1.10	0.101
1st visit to PHCC			
Yes	1		
No	**2.27**	**1.16 - 4.42**	**0.016**
Job satisfaction of health workers[a]	1.03	0.96 - 1.09	0.397

AOR = Adjusted odds ratio; CI = confidence interval

[a]N = 363

3.2 Health workers' job satisfaction

3.2.1 Characteristics of health workers

The characteristics of 363 health workers are shown in Table 10. Their mean age was 41 years old (SD 11.2). Of all health workers, 64.2% were females. All of them had at least secondary education and 50.1% had university or higher level of education. More than 50% of health workers were married or in a cohabit relationship. The education level between females and males was significantly different, 14.6% of males and 3.4% of females had only secondary education ($p < 0.001$).

Regarding the job characteristics, 38.3% were health care professionals, 20.4% were technical medical staff and 41.3% were administrative staff. Thirty three percent of health workers had a permanent contract. More than 60% of health workers had administrative duties and 21.5% had dual practice. The mean number of working hours per week was 38.6 hours (SD 8.8). Meanwhile, the mean number of years working in the health sector was 11.2 years (SD 9.3) and the mean number of years working in the PHCCs was 6.5 years (SD 7.1).

Between female and male health workers, significant differences were observed in their dual practice. Of total, 35.4% of males and 13.7% of females had another job in the private health care sector ($p < 0.001$). The mean working hours per week for male health workers was 42.0 (SD 12.9) and 36.6 (SD 4.1) for female health workers ($p < 0.001$). The mean number of years working in the PHCCs for males was 5.6 (SD 6.4) and 7.4 (SD 7.5) for their female counterparts ($p = 0.020$). Around 20% of male health workers had a third party contract, while 12.5% of their female counterparts had this type of contract ($p = 0.039$). Type of health worker was also significantly different between male and females, among health care professionals 40.8% were males and

36.9% were females; while among technical staff, 9.2% were males and 26.6% were females ($p < 0.001$).

Table 10. Characteristics of health workers

Characteristics N (%)	Total 363 (100)	Sex		*p*-value*
		Female 233 (64.2)	Male 130 (35.8)	
Socio-demographic characteristics				
Age				
Mean (SD)	41.8 (11.2)	41.4 (10.8)	42.5 (11.8)	0.373
Education				
Secondary	27 (7.4)	8 (3.4)	19 (14.6)	**< 0.001**
Technical	154 (42.4)	110 (47.2)	44 (33.9)	
University	129 (35.5)	79 (33.9)	50 (38.5)	
Post-graduate	53 (14.6)	36 (15.5)	17 (13.1)	
Marital status				
Single	136 (37.5)	87 (37.3)	49 (37.7)	0.962
Married/Live-in partner	198 (54.5)	128 (54.9)	70 (53.9)	
Divorced/widow	29 (8.0)	18 (7.7)	11 (8.5)	
Job characteristics				
Type of health worker				
Health care professional	139 (38.3)	86 (36.9)	53 (40.8)	**< 0.001**
Technical staff	74 (20.4)	62 (26.6)	12 (9.2)	
Administrative staff	150 (41.3)	85 (36.5)	65 (50.0)	
Type of contract				
Permanent	122 (33.6)	86 (36.9)	36 (27.7)	**0.039**
Contract for services	184 (50.7)	118 (50.6)	66 (50.8)	
Third party contract	29 (8.0)	29 (12.5)	28 (21.6)	
Administrative functions				
Yes	231 (63.6)	156 (67.0)	75 (57.7)	0.079
No	132 (36.4)	77 (33)	55 (42.3)	

Dual practice				
Yes	78 (21.5)	32 (13.7)	46 (35.4)	< **0.001**
No	285 (78.5)	201 (86.3)	84 (64.6)	
Working hours per week				
Mean (SD)	38.6 (8.8)	36.6 (4.1)	42.0 (12.9)	<**0.001**
Years working in health sector				
Mean (SD)	11.2 (9.3)	11.4 (9.1)	11.0 (9.7)	0.697
Years working in the PHCC				
Mean (SD)	6.5 (7.1)	7.4 (7.5)	5.6 (6.4)	**0.020**

* Independent sample t-test for continuous variables and chi-square for categorical variables

3.2.2 Job satisfaction scale

Table 11 shows the results of the job satisfaction scale. Overall, 32% of health workers were satisfied with their jobs. Within the 4 domains explored, 76.0% of all health workers were satisfied with the meaning of task domain; 36.1%, with working conditions domain; 44.9%, with personal and/or social acknowledgement domain; and 23.1%, with economic benefits domain. Among the four domains, the higher dissatisfaction was observed in the personal and/or social acknowledgement domain (38.8%).

Among the different types of health workers, 29.3 % of health care professionals, 39.2% of technical staff and 30.9% of administrative staff were satisfied with their jobs. Within the four domains, the highest satisfaction for each of the three types of health workers was for the meaning of task domain, where 79.3% of health care professionals, 81.1% of technical staff, and 70.5% of administrative staff were satisfied with this domain. The highest dissatisfaction for health care professionals was found in the economic benefits domain (39.3%), for technical staff was the personal

and/or social acknowledgment domain (35.1%), and for administrative staff was the working conditions domain (23.5%).

Economic benefits domain was the only domain that showed a significant difference between the three types of health workers. Satisfaction of this domain among health care professionals was 12.1%, for technical staffs was 27% and for administrative staff was 31.5% ($p < 0.001$).

Table 11. Job satisfaction scale results per type of health worker

Job satisfaction Scale	Total			Type of health worker									*p*-value*
				Health care professional			Technical staff			Administrative staff			
	Satisfied	Average	Dissatisfied	Satisfied	Average	Dissatisfied	Satisfied	Average	Dissatisfied	Satisfied	Average	Dissatisfied	
Overall Job satisfaction	116 (32.0)	175 (48.2)	72 (19.8)	41 (29.3)	67 (47.9)	32 (22.9)	29 (39.2)	38 (51.4)	7 (9.5)	46 (30.9)	70 (47.0)	33 (22.1)	0.144
Domains													
Meaning of task	276 (76.0)	67 (18.5)	20 (5.5)	111 (79.3)	24 (17.1)	5 (3.6)	60 (81.1)	11 (14.9)	3 (4.1)	105 (70.5)	32 (21.5)	12 (8.0)	0.279
Working conditions	131 (36.1)	155 (42.7)	77 (21.2)	46 (32.9)	65 (46.3)	29 (20.7)	33 (44.6)	28 (37.8)	13 (17.6)	52 (34.9)	62 (41.6)	35 (23.5)	0.448
Personal/social acknowledgement	163 (44.9)	59 (16.3)	141 (38.8)	67 (47.9)	27 (19.3)	46 (32.9)	34 (46.0)	14 (18.9)	26 (35.1)	62 (41.6)	18 (12.1)	69 (4.3)	0.133
Economic benefits	84 (23.1)	182 (50.1)	97 (26.7)	17 (12.1)	68 (48.6)	55 (39.3)	20 (27.0)	41 (55.4)	13 (17.6)	47 (31.5)	73 (49.0)	29 (19.5)	**< 0.001**

*Chi-square test

3.2.3 Factors associated with overall job satisfaction

Table 12 shows the results of the robust multiple ordinal logistic regression for the overall job satisfaction of health workers. In this model, health workers who did not have a dual practice were nearly twice as likely to be satisfied with their job as those who had a dual practice (AOR = 1.93, 95% CI = 1.02 – 3.67). Those health workers who had a third party contract were three times more likely to be satisfied with their job compared to those who had a permanent contract (AOR = 2.98, 95% CI 1.39 – 6.35). The number of working hours per week was negatively associated with job satisfaction. Health workers with higher number of working hours were 1.03 times less likely to be satisfied with their job (AOR = 0.97, 95% CI 0.94 – 0.99).

Results of the marginal effects for the satisfaction category shows that those who do not have a dual practice were 12.9% more likely to be satisfied with their jobs compared to those who had another job in the private health care sector. Those who had a third party contract were 25.5% more likely to be satisfied with their job, compared to those who had a permanent contract. For each hour increase in the working hours per week, health workers were 0.7% less likely to be satisfied with their job.

Table 12. Factors associated to overall job satisfaction: Robust multiple ordinal logistic regression regression

Covariates	AOR	95% CI	*p*-value	dy/dx*	*p*-value
Gender					
Male	1				
Female	0.74	0.48 - 1.12	0.157	-0.066	0.162
Age (years)	1.02	0.99 - 1.04	0.160	0.004	0.162

Years working in PHCC	1.02	0.98 - 1.07	0.304	0.005	0.303
Working hour per week	**0.97**	**0.94 - 0.99**	**0.007**	**-0.007**	**0.006**
Dual practice					
Yes	1				
No	**1.93**	**1.02 - 3.67**	**0.044**	0.129	**0.029**
Type of health worker					
Health professional	1				
Technical staff	1.46	0.77 - 2.78	0.249	0.084	0.266
Administrative staff	0.77	0.39 - 1.47	0.425	-0.056	0.423
Type of contract					
Permanent contract	1				
Contract for services (CAS)	1.28	0.74 - 2.20	0.371	0.052	0.375
Third party contract	**2.98**	**1.39 - 6.35**	**0.005**	**0.255**	**0.005**

AOR = Adjusted Odds Ratio; CI= Confidence Interval
* marginal effect for satisfaction category

3.2.4 Factors associated with job satisfaction scale domains

Table 13 shows the results of the robust multiple ordinal logistic regression for the meaning of task domain. Higher education was significantly associated with the satisfaction of the meaning of task domain (AOR = 1.15, 95% CI 1.03 – 1.28). The marginal effect results for the satisfaction category shows that for each year increase in studies, health workers were 2.5% more likely to be satisfied with the meaning of task domain.

Table 13. Factors associated to meaning of task domain satisfaction: Robust multiple ordinal logistic regression

Covariates	AOR	95% CI	*p*-value	dy/dx*	*p*-value
Gender					
Male	1				
Female	1.21	0.71 - 2.07	0.476	0.035	0.491
Age (years)	1.01	0.98 - 1.04	0.465	0.002	0.468
Years of education	**1.15**	**1.03 - 1.28**	**0.008**	**0.025**	**0.012**
Years working in PHCC	1.03	0.97 - 1.09	0.361	0.005	0.361
Dual practice					
Yes	1				
No	0.78	0.33 - 1.85	0.572	-0.042	0.553
Administrative duties					
Yes	1				
No	0.79	0.53 - 1.19	0.265	-0.041	0.273
Type of health worker					
Health professional	1				
Technical staff	1.66	0.66 - 4.23	0.283	0.082	0.227
Administrative staff	1.05	0.48 - 2.28	0.906	0.008	0.906
Type of contract					
Permanent contract	1				
Contract for services (CAS)	1.15	0.62 - 2.14	0.658	0.024	0.656
Third party contract	1.37	0.40 - 4.69	0.616	0.052	0.593

AOR = Adjusted Odds Ratio; CI= Confidence Interval
* marginal effect for satisfaction category

Table 14 shows the results of the robust multiple ordinal logistic regression for the working conditions domain satisfaction. In this model, health workers who did not have a dual practice were nearly twice as likely to be satisfied with the working

conditions domain as those who had another job in the private health care sector (AOR = 1.81, 95% CI = 1.001 – 3.26). Results of the marginal effects for the satisfaction category shows that those who did not have a dual job were 12.9% more likely to be satisfied with the working conditions domain compared to those who had a dual job.

Table 14. Factors associated to working conditions domain satisfaction: Robust multiple ordinal logistic regression

Covariates	AOR	95% CI	*p*-value	dy/dx*	*p*-value
Gender					
Male	1				
Female	0.78	0.49 - 1.24	0.293	-0.058	0.296
Age (years)	1.01	0.98 - 1.04	0.477	0.002	0.476
Years of education	1.05	0.95 - 1.27	0.335	0.012	0.339
Years working in PHCC	1.02	0.97 - 1.06	0.409	0.004	0.411
Dual practice					
Yes	1				
No	**1.81**	**1.01 - 3.26**	**0.047**	**0.129**	**0.040**
Administrative duties					
Yes	1				
No	0.83	0.49 - 1.41	0.496	-0.041	0.490
Type of health worker					
Health professional	1				
Technical staff	1.55	0.99 - 2.41	0.053	0.103	0.063
Administrative staff	0.77	0.39 - 1.53	0.456	-0.059	0.452
Type of contract					
Permanent contract	1				
Contract for services (CAS)	1.11	0.53 - 2.32	0.786	0.023	0.786
Third party contract	2.37	0.89 - 6.23	0.082	0.207	0.084

AOR = Adjusted Odds Ratio; CI= Confidence Interval
* marginal effect for satisfaction category

Table 15 shows the results of the robust multiple ordinal logistic regression for the social and/or personal acknowledgement domain. In this model, working hours per week and dual practice were negatively associated with health workers' job satisfaction. Health workers with higher number of working hours were 1.02 less likely to be satisfied with the social and/or personal acknowledgement domain (AOR = 0.98, 95% CI 0.96 – 0.99). Health workers who did not have a dual practice were 1.7 times less likely to be satisfied with the social and/or personal acknowledgement domain as those who had another job in the private health care sector (AOR = 0.59, 95% CI = 0.38 – 0.94).

Results of the marginal effects for the satisfaction category shows that those who did not have a dual job were 12.7% less likely to be satisfied with the with social and/or personal acknowledgement domain compared to those who had a dual job. For each hour increase in the number of working hours per week, health workers were 0.6% less likely to be satisfied with their job.

Table 15. Factors associated to social/personal acknowledge domain satisfaction: Robust multiple ordinal logistic regression

Covariates	AOR	95% CI	*p*-value	dy/dx*	*p*-value
Gender					
Male	1				
Female	1.42	0.92 - 2.19	0.111	0.086	0.102
Age (years)	1.01	0.98 - 1.04	0.559	0.002	0.559
Years of education	1.06	0.96 - 1.17	0.268	0.014	0.267
Civil status					
Single	1				
Married/Cohabit	0.77	0.51 - 1.16	0.209	-0.064	0.206
Divorced/Widowed	0.68	0.37 - 1.26	0.225	-0.091	0.212
Years working in PHCC	1.03	0.98 - 1.07	0.233	0.006	0.234
Working hours per week	**0.98**	**0.96 - 0.99**	**0.024**	**-0.006**	**0.023**
Dual practice					
Yes	1				
No	**0.59**	**0.38 - 0.94**	**0.027**	**-0.127**	**0.027**
Administrative duties					
Yes	1				
No	1.32	0.83 - 2.09	0.235	0.068	0.234
Type of contract					
Permanent contract	1				
Contract for services (CAS)	1.01	0.52 - 1.92	0.990	0.001	0.990
Third party contract	1.93	0.86 - 4.35	0.113	0.162	0.107

AOR = Adjusted Odds Ratio; CI= Confidence Interval
* marginal effect for satisfaction category

Table 16 shows the results of the robust multiple ordinal logistic regression for the economic benefits domain satisfaction. In this model, older health workers were more likely to be satisfied with this domain (AOR 1.03, 95% CI 1.01 – 1.05). Health

workers who did not have administrative duties were 2.4 times more likely to be satisfied with the economic benefits domain than those who had to perform those duties (AOR = 2.37, 95% CI 1.59 – 3.52). Technical staff were nearly 3 times more likely to be satisfied with the economic benefits domain (AOR = 2.71, 95% CI 1.52 – 4.84) and administrative staff were 3.5 times more likely to be satisfied with the economic benefits domain than health care professionals (AOR= 3.49, 95% CI 1.87 – 6.49).

Civil status and number of working hours per week were negatively associated with satisfaction of the economic benefits domain. Health worker who were divorced or widowed were 2.4 times less likely to be satisfied with the economic benefits domain than those who were single (AOR = 0.41, 95% CI 0.19 – 0.87). Those who worked higher number of hours per week were 1.04 times less likely to be satisfied with the economic benefits domain (AOR = 0.96, 95% CI 0.93 – 0.99).

Results of the marginal effects for the satisfaction category shows that for each year increase in age, health workers were 0.5% more likely to be satisfied with the economic benefits domain. Health workers who did not have administrative duties were 15.0% more likely to be satisfied with the economic benefits domain compared to those who have administrative duties. Technical staff and administrative staff were 19.0% and 21.7%, respectively, more likely to be satisfied with the economic benefits domain compared to the health care professionals. Health workers who were divorced or widowed were 11.3% less likely to be satisfied with the economic benefits domain compared to those who were single. And for each hour increase in the number of working hours per week, health workers were 0.6% less likely to be satisfied with the economic benefits domain.

Table 16. Factors associated to economic benefits domain satisfaction: Robust multiple ordinal logistic regression

Covariates	AOR	95% CI	*p*-value	dy/dx*	*p*-value
Gender					
Male	1				
Female	0.78	0.56 - 1.08	0.137	-0.041	0.138
Age (years)	**1.03**	**1.01 - 1.05**	**0.017**	**0.005**	**0.021**
Years of education	1.07	0.95 - 1.21	0.274	0.011	0.274
Civil status					
Single	1				
Married/Cohabit	0.69	0.42 - 1.13	0.141	-0.061	0.170
Divorced/Widowed	**0.41**	**0.19 - 0.87**	**0.021**	**-0.113**	**0.009**
Working hours per week	**0.96**	**0.93 - 0.99**	**0.028**	**-0.006**	**0.029**
Dual practice					
Yes	1				
No	1.46	0.65 - 3.28	0.353	0.058	0.310
Administrative duties					
No	1				
Yes	**2.37**	**1.59 - 3.52**	**< 0.001**	**0.150**	**< 0.001**
Type of health worker					
Health professional	1				
Technical staff	**2.71**	**1.52 - 4.84**	**0.001**	**0.190**	**0.003**
Administrative staff	**3.49**	**1.87 - 6.49**	**< 0.001**	**0.217**	**< 0.001**
Type of contract					
Permanent contract	1				
Contract for services (CAS)	1.04	0.64 - 1.68	0.887	0.006	0.887
Third party contract	1.91	0.77 - 4.73	0.159	0.119	0.193

AOR = Adjusted Odds Ratio; CI= Confidence Interval
* marginal effect for satisfaction category

4. DISCUSSION

The purpose of this study was to determine patients' satisfaction and health workers' job satisfaction, to examine the factors associated with both variables independently, and to examine the association between health workers' job satisfaction and patients' satisfaction. Although previous research have found links between patients' satisfaction and health workers' job satisfaction, they focused mainly on job satisfaction of physicians and nurses, and did not include other health care professionals such as midwives, dentists, psychologists and nutritionists. Furthermore, patients not only interact with their health care professional when they seek for health care. They are also in contact with technical staff and administrative staff in each encounter during their visits to the primary health care facilities. Therefore it is important to measure the impact of the job satisfaction of the team of health workers on patients' satisfaction. To the best of my knowledge, this is the first research to study the association between health care professionals, technical and administrative staff's job satisfaction with patients' satisfaction. It also serves as the first study to examine patients' satisfaction and job satisfaction of health workers at primary health care centers in Peru.

4.1 Summary of main findings

In this study, 37.5% of patients were satisfied with the health services they received at the PHCCs in Callao, Peru. Among health workers in the selected PHCCs, 32.0% were satisfied with their jobs. Factors associated with overall higher satisfaction with health care services among patients included having a shorter waiting time, visiting the PHCC for a follow-up appointment, not having to pay for medical services, poor self-

rated health status and being seen by a nutritionist, psychologist or nurse during the consultation. Health workers' job satisfaction was associated with the assurance and empathy domain of patients' satisfaction. Factors associated with health workers' higher job satisfaction included not having a dual practice, having a third party type of contract and less working hours per week.

4.2 Patients' satisfaction

A low proportion of patients were satisfied with the health care services received in the PHCCs in Callao, Peru. This result suggests that there is room for improvement according to the patients' perspective. As the SERVQUAL instrument measures patients' expectations and perceptions of the health care services received [88], the results shows that patients' expectations were higher than their perceptions, leading to a low satisfaction rate. Patient's satisfaction in this study is lower compared with the previous studies conducted in Peru, where satisfaction ranged from 44.0% to 86.6% [77-80]. The reason for this could be the different settings of the studies. This study was conducted in the outpatient services of PHCCs, while previous studies were conducted in the outpatient services of hospitals. Results of patients' satisfaction with primary health care services in other countries show a higher satisfaction level compared to the results of this study, with satisfaction that ranges from 62.6% in a study in Ethiopia to 81.8% in a study in Spain [32, 99-103]. A reason for this could be attributed to the differences on how care is provided across different settings, it can also be explained by the differences in the instrument used, the data collection process and by the patients themselves, who can have different expectations and experiences regarding the quality of the medical services.

Among the SERVQUAL domains, patients' satisfaction varied between 44% for tangibles domain to 75.6% for assurance domain. This result shows a relatively high assurance level, which indicates that health care providers inspire trust and confidence to their patients [88]. These are important attributes to establish human inter-relationships, especially in the context of health problems, as patients should be able to confide in their healthcare providers to share their medical problems and trust that they will be able to help them improve and become healthy. A previous study in Peru which used the same methodology, found similar results for all domains except for assurance domain which was lower at 52% [77].

4.3 Factors associated with overall patients' satisfaction

In this study, patients who had a good self-rated health status were less satisfied with the health services provided in the PHCCs compared to those who had poor self-rated health status. This result contrast previous studies which found that patients who had a poorer health status were more likely to be less satisfied with the quality of health services [25, 104-106]. This could be attributed to the different settings, as these previous studies have been conducted in hospitals. Another explanation could be that patients with poorer health status may have perceived more consideration from health workers due to their health status, which in turn produced higher satisfaction with the health care services.

Subjective shorter waiting time was associated with higher patient satisfaction. Patients who perceive a longer waiting time than expected, tend to have lower satisfaction with services, as longer waiting times creates disappointment and increases concern over the psychological symptoms of the disease [107, 108]. Results of this study are consistent with evidence from a previous study in Ethiopia among patients visiting the outpatient

services of hospitals [27] and a study in US among patients visiting the emergency services of a hospital [31].

Patients who visited the PHCCs for a follow-up appointment were more likely to be satisfied with the medical services than those who were visiting with a new illness. Patients who returned to the PHCC for a follow-up may have had a previous good experience with the quality of health services, as it has been demonstrated that satisfied patients are more likely to return for the same service in the future [109]. As satisfaction is measured by the gap between expectations and perceptions, a previous experience in the PHCC could mean that patients may already know what type of service to expect; and therefore the gap between expectations and perceptions could be narrowed. This result is consistent with previous studies of outpatient services in hospitals in Uganda [83] and US [21,110].

Patients who did not have to pay for their medical services were more likely to be satisfied with the quality of health care. Only patients affiliated to the CHI had free access to medical services at the PHCCs. Patients who hold any other type of health insurance have to pay to receive medical attention at the PHCCs. In this study, patients who paid for medical services included those who did not hold the CHI and nearly 8% of patients who even though had this insurance, had to pay for health care services. Patients who pay for medical services may expect a higher quality of services and may be discouraged by long waiting times. This is because patients consider the payment reasonable if their perceived quality of the health care received is good. However, they may consider that the services are not worth the price paid if they are not satisfied with the quality received [111]. Previous studies have shown consistent results [83,84], where payment during visits negatively impacted patients' satisfaction.

Patients who were seen by a midwife or a dentist were less likely to be satisfied with the health services received compared to those who were seen by other health care professionals (psychologist, nutritionist, technical nurse or nurse). In the PHCCs, the number of patients seeking a consultation with a psychologist and/or nutritionist is lower than those seeking for physicians, dentist and midwives. Usually the duration of a consultation with a psychologist is longer, due to the nature of this encounter [112-114]. Therefore, it may be possible that the easier access to these health care professionals and the longer time that can be allocated to their consultation may influence their satisfaction with these particular cadres. A study among primary health care practices in US showed that patients were more likely to be satisfied with the interactions with mid-level providers than with physicians [115]. Also, a study among physician specialties showed that patients were more satisfied with obstetricians' and gynecologists' caring and friendly attitude compared to other specialties [116]. No previous studies have compared patients' satisfaction with regard to the different cadres of health care professionals.

4.4 Factors associated with satisfaction of SERVQUAL domains

The factors associated with each of the five domains of the SERVQUAL instrument are, in their majority, similar to the ones associated with overall patients' satisfaction. The reliability domain evaluates the capability to provide the promised service thoroughly and accurately. The factors associated with patients' higher satisfaction of reliability domain were higher education, visiting the PHCC for a follow-up consultation and not having to make a payment for the medical services received. Among these factors, education level will be discussed further in this section, as the other variables have been previously discussed in the overall satisfaction section.

Patients with higher education were more likely to be satisfied with the reliability domain. Previous studies have shown inconsistent results regarding this association. Two studies have reported a positive association between education level and satisfaction, thus supporting the results found in this study [117, 118]. On the other hand a meta-analysis and a previous study in Peru reported a negative association between education and patient satisfaction [22,77]; and other studies found no association between these two variables [119, 120].

Assurance domain evaluates the ability to show courtesy and to convey credibility, trust and confidence. The factors associated with patients' higher satisfaction with this domain were patients who were unemployed, had a good self-rated health status, a shorter waiting time, a longer duration of the consultation and visiting the PHCC for a follow-up consultation.

Patients who were unemployed were more likely to be satisfied with the assurance domain. Those who do not have a job may not have time constraints and may be more willing to wait in their consultation. Waiting time in PHCCs can be long, with an average waiting time of 170 minutes in this study. Therefore, for patients who have to work, this time is valuable and long waiting time may affect their satisfaction.

Patients who experienced a longer duration of the time spent with the health care professional were more likely to be satisfied with the assurance domain. Longer encounters between patients and physicians allow for a proper communication without time constraints, giving the patient the necessary amount of time to explain his/her medical problems, and allowing enough time to ask any questions regarding their health concerns. This is result is consistent with studies from UK [121,122], Malaysia [123] and US [124]. Shorter duration of consultation is not only associated with patient

dissatisfaction, but also with physician dissatisfaction, reduced health care promotion, and increase mistakes in prescriptions, referrals and malpractice claims [125-131].

Tangible domain refers to the physical characteristics of the equipment, facilities and personnel of the PHCC. The only factor associated with patients' higher satisfaction with this domain was not being a new patient to the PHCC. Patients who are visiting a health facility for a second time or more were probably satisfied with their first experience and therefore, decide to return when a new health problem emerges [109]. Also, new patients to a PHCC may have higher expectations of the facilities and the medical services they are going to receive; which can widen the gap between expectations and perceptions, and therefore, increase the possibility of dissatisfaction.

4.5 Patients' satisfaction and health workers' job satisfaction

In this study, health workers' higher job satisfaction was associated with patients' higher satisfaction with the assurance and empathy domain of SERVQUAL instrument. Assurance and empathy are characteristics highly related to the health worker-patient interaction, as they involve the compassion of health workers towards the patients and understanding their needs, as well as the trust and confidence that health workers inspire on the patients [88]. Physician's attitudes may affect the patient-physician communication and interaction; therefore, affect satisfaction [30, 132, 133]. If physicians experience negative feelings towards their work, they may pay less attention to their own work and are more likely to make decisions that are less time consuming. On the other hand, physicians who have positive feelings towards their job tend to be more empathic and develop better rapport with the patients [56].

Previous studies are consistent with this result, although they are mainly focused on physicians' job satisfaction. A study in US among primary care physicians in the private practice showed that higher job satisfaction of physicians was associated with greater patient trust and confidence in their primary physicians [57]. In Germany, a study among surgeons in a hospital showed associations between surgeons' working conditions, job satisfaction and patients' satisfaction [59]. A study among physician and non-physicians in primary care practices in Germany showed correlations between non-physician team member job satisfaction and patients' satisfaction [54].

The association between patients' satisfaction and health workers' job satisfaction shows the importance of the patient-health worker relationship in patients' perception of the health services. In Peru, health care professionals and technical staff receive courses on how to create rapport with patients during their professional training [134]. However, such training is not reinforced when they are working such as in-service training. Moreover, other hospital workers such as administrative staff usually do not receive this type of education during their technical or university studies. Therefore, it is important to provide in service training to all health workers (including administrative staff and other cadres working in health facilities) to improve their communication skills and rapport abilities, which could be beneficial to improve patients' perception of the services received.

4.5 Health workers' job satisfaction

In this study, 32.0% of 363 health workers were satisfied with their job at the PHCC in Callao. This low satisfaction suggests that improvements in working conditions

are necessary. Data collection of this research was halted due to a medical strike, demonstrating the dissatisfaction of health workers on their working conditions. Their main complaint was the economic benefits, which has been a problem for many years now and the main reason for the medical strikes in the past three years [135]. During the medical strikes, outpatient services of PHCCs and hospitals are closed, and only emergency services are provided. This directly affects the access to health services and may affect patients' outcomes as these medical strikes can take many days, last year the medical strike lasted 32 days [136, 137]. Patients usually can only wait for the medical strike to finish, as going for a consultation in the private sector is not a possibility for many of them due to their limited budget.

The low job satisfaction is consistent with a previous study in Peru [81] and in Mexico [138]. In contrast, studies in other Latin-American countries such as Argentina, found 50% of job satisfaction among physicians [139], in Mexico, 58% of health workers were satisfied with their job [140]. A study in Germany also found a higher satisfaction with 64% of primary care physicians satisfied with their job [141].

Among the job satisfaction domains, the lowest score were for working conditions and economic benefits, with less than 30% of health workers' satisfied. Salaries and economic benefits in the public sector are low compared to the private health sector. As a result of the recent medical strikes, the MoH proposed to improve salaries and working conditions. However, there has not been progress and the physicians had a 2-day medical strike on February 2014, to demand that the MoH keep their commitments to improve their working conditions.

4.6 Factors associated with health workers' job satisfaction

In this study, health workers who did not have a dual practice were more satisfied with their job compared to those who had another job in the private health care sector. Dual practice is a common solution to complement the low salaries received in the public sector [142]. Health worker who hold dual practice can benefit from the advantages that bring working for both the private and public sector. The advantages of the public sector are the economic benefits such as state pension, stable income, paid holidays and working predictable hours. While the advantages of the private sector are better salaries and better resource availability (infrastructure, medicines, equipments) [143]. It was expected that health workers who were holding a dual practice, would be more satisfied with their job. However, in this study, health workers who did not have dual job were more satisfied than those who had another job in the private practice. This study cannot establish causality due to the study design. Therefore, it is not possible to establish whether dissatisfied health workers seek for dual practice to raise their income; or if those with dual practice had lower satisfaction because of the longer working hours. Moreover, one of the findings of this study was that those health workers with longer working hours were less likely to be satisfied with their job. This could be an explanation why those with dual practice were less satisfied, as they have two jobs and longer working hours.

Health workers who had a third party contract were more likely to be satisfied with their job compared to those who had a permanent contract. The third party contract party does not have any economic benefits and has to be renewed monthly; while permanent contract is an indefinite contract and includes benefits such as one month paid holidays, enrollment in the social health insurance and a retirement fund. It would have been expected that those who have a permanent contract, are more satisfied with their job due to

the job security. However, there is an inverse association. An explanation for this could be that the sample studied involved different cadres of health workers, who have different expectations for their job satisfaction. Majority of health workers with a third party contract were either mid-level health providers or administrative staff. Health care professionals usually have a permanent contract or a contract for services. This result contrasts with a previous study among nurses working in hospitals in China, which showed that those who had a permanent contract were more satisfied with their job, compared to those nurses who had a contract with limited job security and benefits [144].

Health workers with higher number of working hours were less likely to be satisfied with their job. Rewards or incentives could be implemented to motivate the health workers, and counteract the negative effect of long working hours per week on their job satisfaction. This result is consistent with previous studies among German general practitioners [145], British general practitioners [146], Pakistani medical and surgical residents [147], and American rural general practitioners [148].

4.7 Factors associated with health workers' job satisfaction scale domains

The factors associated with heath workers' higher satisfaction of the economic benefits domain were older heath workers, not having administrative duties and being a technical or administrative staff. Those who were divorced and those who had higher number of working hours were less likely to be satisfied with this domain.

Health worker who did not have administrative duties were more likely to be satisfied with the economic benefits domain compared with those who have administrative duties. Health care professionals may especially see administrative duties as a burden, and

a duty that decreases their available time to see patients [149,150]. This result is consistent with a study among physicians in Switzerland [53].

Technical and administrative staffs were more likely to be satisfied with the economic benefits compared to health care professionals. Among these three types of health workers, their job expectations may be different, especially health care professionals may have higher expectations of their jobs. This result is consistent with a study in primary care practices in Germany. This study reported higher job satisfaction among non-physicians compared to physicians [54].

4.8 Limitations of the study

Results of this study should be carefully discussed owing to five limitations. First, the cross-sectional design may not allow to determine the causal relationship between patients' satisfaction and health workers' job satisfaction. It remains unclear whether health workers' job satisfaction contributed to patients' satisfaction, or whether patient satisfaction is the cause of their job satisfaction. However, from a logical point of view and the conceptual framework used in this study, it is possible to assume that health worker's job satisfaction contributes to patients' satisfaction.

Second, as with any subjective measure, satisfaction may have been underreported or over-reported. However, to prevent the effect of this limitation, patients and health workers were clearly informed the objectives of this study and the importance of their sincere responses. They were also reassured of the confidentiality of the information in the questionnaires and were given adequate time to respond to them.

Third, selection bias of PHCCs could be a limitation in this study. Due to the medical strike that halted the data collection process, 21 PHCCs were included instead of the 44 PHCCs originally planned. However, as these are public facilities run by the MoH, they follow the same standards and offer the same quality of health services. Therefore the selected 21 PHCCs may represent primary health care facilities in Callao.

Fourth, the patient's study sample was over-represented by women respondents. The PHCCs have women and children as their main customers. Although generalizability of results should be taken with caution, in this study, the following efforts were made to prevent the effects of this limitation: patients were randomly selected using a simple random sampling method, rejection rate was similar for both female and male patients; and the effect of gender was controlled by performing a multiple regression analysis.

Fifth, although health workers and patients from 21 health centers were included in this study, these health centers belonged to a defined geographical area. Therefore, the findings from this study may not necessarily be generalizable to the whole patients and health worker population in this region, and those who live in a different setting. However, the results may be applicable to health facilities with similar characteristics within Peru; and other countries with similar health systems. Future research, should involve other geographical regions as well as urban and rural settings.

5. CONCLUSION AND RECOMMENDATIONS

This study found a low patients' and health workers' satisfaction with health services and job, respectively, in the primary health care centers in Callao, Peru. Patients who experienced a shorter waiting time, who were visiting the primary health center for a follow up appointment and who did not have to pay for medical services; were more likely to be satisfied with the service quality. Those patients who had a good self-rated health status and who were seen by a midwife or dentist were less likely to be satisfied with the medical services received. Health workers' higher job satisfaction was associated with patients' higher satisfaction with the empathy and assurance domain of SERVQUAL instrument. Predictors of health workers' higher job satisfaction included not having a dual practice, having a third party contract and having less working hours per week.

The low satisfaction of patients and that of health workers for their job is of a big concern. These are among the measurements of overall health system's performance. Findings of this study indicate that reliability, responsiveness and tangibles elements of the service quality should have priority when targeting policies to improve healthcare services. The association of health workers' and patient's satisfaction provides evidence to support health policy improvements in the working environment. Appropriate working conditions and economic benefits are necessary when implementing policies to improve the job satisfaction of health workers. This in turn will influence patients' evaluation of the health service quality.

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Appendix 1: Map of Callao, Peru

Callao: study site

Appendix 2: Categorization and level of complexity of health centers belonging to Ministry of Health

Level of Care	Level of complexity	Category of Health Center	Health centers belonging to Ministry of Health
First level of care	1st level	I-1	Health post
	2nd level	I-2	Heath post with doctor
	3rd level	I-3	Health center without hospitalization
	4th level	I-4	Health center with hospitalization
Second level of care	5th level	II-1	Hospital I
	6th level	II-2	Hospital II
Third level of care	7th level	III-1	Hospital III
	8th level	III-2	Specialized institution

Source: NT N° 0021 – MINSA/DGSP V.01 Technical Norm – Health centers categories, Ministry of Health, 2004

Appendix 3. List of primary health centers in Callao, Peru

Level I-2 Primary health care center
Callao
Jose Olaya
Puerto Nuevo
200 millas
Aeropuerto
Bocanegra
El Alamo
El Ayllu
Faucett
Santa Rosa de Pachacutec
Ventanilla baja
Angamos
Bahia Blanca
Ciudad Pachacutec
Gambeta Baja
Jose Boterin
Juan Pablo II
Miguel Grau
Oquendo
Playa Rimac
Poligono IV
Previ
La Perla
La Punta
3 de Febrero
Luis Felipe de las Casas
Villa los Reyes
Ramon Castilla
San Juan Bosco
Santa Rosa
Hijos Almirante Grau
Ventanilla alta
Ventanilla este

Level I-3 Primary health care center
Defensores de la patria
Mi Peru
Alberto Barton
Manuel Bonilla
Santa Fe
Sesquicentenario
Carmen de la Legua
Villa Senor de los Milagros
Alta Mar

Level I-4 Primary health care center
Acapulco
Marquez
Gambeta Alta
Materno Infantil Pachacutec
Bellavista Peru-Corea

Appendix 4: Sample size calculation for patients in each primary health care center

Primary health care center	Number of patients seen in the past 6 months	Calculated sample size
3 de Febrero	770	65
Santa Rosa de Pachacutec	1,689	68
Mi Peru	6,641	70
Ciudad Pachacutec	3,607	69
Bahia Blanca	2,754	69
Peru-Korea	9,213	70
Luis Felipe de las Casas	3,913	69
Ventanilla alta	3,931	69
Defensores de la patria	2,845	69
Angamos	3,262	69
Hijos Almirante Grau	3,455	69
Marquez	3,281	69
Ventanilla este	1,901	68
Ventanilla baja	1,660	68
Palmeras de Oquendo	2,344	69
200 millas	2,587	69
Faucett	3,790	69
El Alamo	3,598	69
Sesquicentenario	2,852	69
Previ	3,244	69
Bocanegra	3,027	69
Total		1,444

Appendix 5. Scores and categories of job satisfaction scale

Response	Domain				Overall score
	Meaning of task	Working conditions	Personal and/or social acknowledgement	Economic benefits	
Strongly satisfied	37 - 40	41 - 44	24 - 25	20 – 24	117 - 119
Satisfied	33 - 36	35 - 40	21 - 23	16 – 19	103 - 116
Average	28 - 32	27 - 34	18 - 20	11 – 15	89 - 102
Dissatisfied	24 - 27	20 - 26	12 - 17	8 – 10	75 - 88
Strongly dissatisfied	8 - 23	9 - 19	5 - 11	5 – 7	27 - 74

Source: Escala de Satisfaccion Laboral SL-SPC, Palma Sonia (2006)

Appendix 6. Patient's questionnaire (English)

Patient satisfaction in the health centers of Callao

I. Overview

1. Identification number: _____
2. Name of Health Center: _____
3. Date of survey (dd/mm/yyyy): ____ / ___ / _____

II. Socio-demographic characteristics

4. Date of birth (dd/mm/yyyy): ___/____/_____
5. Age: ____
6. Sex: 1. Male 2. Female

7. Education:

1. None 2. Primary 3. Secondary 4. University

1. Complete 2. Incomplete

Total years of education: _____

8. District of residence: _____
9. Marital status:

1. Single 2. Married 3. Cohabiting 4. Divorced 5. Widowed

10. Occupation: _____
11. Employment status:

1. Employed 2. Retired 3. Student 4. Unemployed 5. Doesn't work

12.Your house is: 1.Owned 2. Rented

13. How much is your family monthly income (approximately)? : _____

III. Overall health

14. In general, would you say your health is:

1. Very good 2. Good 3. Moderate 4. Poor 5. Very poor

IV. Satisfaction questionnaire: SERVQUAL

a) Expectations: Rate the importance of each of the following statements from 1-7 (1 being the lowest and 7 the highest)

	1	2	3	4	5	6	7
15. That you are treated without any difference compared with other patient							
16. That medical consultation takes place in order and following arrival order							
17. That medical consultation takes place according to the sheduled time							
18. That the facility has protocols to attend complaints or claims of patients.							
19. That pharmacy have the drugs prescribed by the physicians							
20. That cashier/pharmacy service is fast.							
21. That admission service is fast							
22. That waiting time for consultation is short.							
23. That if there is a problem or difficulty, it is resolved immediately							
24. That your privacy is respected during consultation.							
25. That you undergo an extensive and thorough medical examination by the physician or other health care professional							
26. That physician or other health care professional gives you enough time to answer your questions and worries about your health problem							
27. That the physician or other health care professional inspires you confidence							
28. That the physician or other health care professional treat you with kindness, respect and patience							
29. That cashier/pharmacy staff treat you with kindness, respect and patience.							
30. That admission staff treat you with kindness, respect and patience							
31. That you understand the explanation about your health and outcome of your medical consultation							
32. That you understand the explanation about the treatment							
33. That adequate signaling (posters, signs and arrows) guides patients							
34. That office and waiting room are clean and comfortable							
35. That the health center provides clean restrooms for patients							
36. That consultation rooms have the equipment and materials needed							

b) Perceptions: Rate from 1 to 7 each of the following questions about the care you received as the outpatient consultation. Consider a 1 as the lowest rating and 7 as the highest rating

	1	2	3	4	5	6	7
37. Were you treated without any difference compared with other patients?							
38. Did the medical consultation took place in order and following arrival order							
39. Did the medical consultation took place according to the sheduled time							
40. Did the facility has protocols to attend complaints or claims of patients?							
41. Did the pharmacy has the drugs prescribed by the physician?							
42. Did the cashier/pharmacy service was fast?							
43. Did the admission service was fast?							
44. Did the waiting time for consultation was short?							
45. If you had a problem or difficulty, was it resolved immediately ?							
46. Did your privacy was respected during consultation ?							
47. Did you received an extensive and thorough medical examination by the physician or other health care professional ?							
48. Did the physician or other health care professional give you enough time to answer your questions and worries about your health problem ?							
49. Did the physician or other health care professional inspired you confidence ?							
50. Did the physician or other health care professional treated you with kindness, respect and patience ?							
51. Did the cashier/pharmacy staff treated you with kindness, respect and patience ?							
52. Did the admission staff treat you with kindness, respect and patience?							
53. Did you understand the explanation about your health and outcome of your medical consultation ?							
54. Did you understand the explanation about the treatment ?							
55. Was there adequate signaling (posters, signs and arrows) to guide the patients ?							
56. Did the consultation room and waiting room were clean and							

comfortable ?							
57. Did the health center provided clean restrooms for patients ?							
58. Did the consultation rooms had the equipment and materials needed ?							

V. Waiting time

59. At what time (approximately) did you arrive to the health center? _____

60. At what time did the appoinment started ? _____

61. Do you feel that the waiting time was:

1. Short 2. Average 3. Long

62. Duration of medical consultation: _____ minutes

63. Waiting time: _____ minutes

VI. Other information

64. Is it the first time you come to this health center?

1. Yes 2. No

65. For your current health problem, is this the first time you visit a health center?

1. Yes 2. No

66. Do you have health insurance?

1. Yes 2. No

67. If you answered "yes" in the previous question, what kind of health insurance do you have?

1. Comprehensive health insurance (CHI) 2. Social health insurance 3. Private

68. If you have CHI, did you use it today for your medical appointment?

1. Yes 2. No

69. You were treated by:

1. Physician 2. Nurse 3. Midwife 4. Nurse-technical assistant
5. Dentist 6. Psychologist 7. Nutritionist 8. Other : _____

Appendix 7. Patient's questionnaire (Spanish)

Satisfacción del paciente en los centros de salud de Callao

I. Información general

7. Número de identificación: _____
8. Nombre del centro de salud: _____
9. Fecha de la entrevista (dd/mm/aaaa): ____/___/_____

II. Socio-demográfico

10. Fecha de nacimiento (dd/mm/aaaa): ___/____/_____
11. Edad: ____
12. Sexo: 1. Masculino 2. Femenino

7. Educación:

1. No 2. Primaria 3. Secundaria 4. Superior

1. Completo 2. Incompleto

Número total de años de estudio: _____

8. Distrito de residencia: _____
9. Estado civil:

1. Soltero 2. Casado 3. Conviviente 4. Divorciado 5. Viudo

10. Ocupación: _____
11. Estado laboral:

1. Trabaja 2. Jubilado 3. Estudiante 4. Desempleado 5. No trabaja

12. Su vivienda es : 1. Propia 2. Alquilada
13. Cuánto es su ingreso mensual familiar (aproximadamente)? : _____

III. Estado general de salud: SF 12

14. En general, usted diría que su salud es:

1. Muy buena 2. Buena 3. Regular 4. Mala 5. Muy mala

IV. Satisfaction : cuestionario SERVQUAL

c) Expectativas : Califique la importancia de cada uno de los siguientes enunciados de 1 a 7 (1 es lo más bajo y 7 lo más alto)

	1	2	3	4	5	6	7
16. Que usted sea atendido sin diferencia alguna en relacion con otras personas.							
17. Que su atención se realice en orden y respetando el orden de llegada							
18. Que la atención por el médico y otro profesiona se realice según el horario programado							
19. Que el establecimiento cuente con mecanismos para atender las quejas o reclamos de los pacientes.							
20. Que la farmacia cuente con los medicamentos que receta el medico							
21. Que la atencion en el area de caja/farmacia sea rapida							
22. Que la atencion en area de admision sea rapida							
23. Que el tiempo de espera para ser atendido en el consultorio sea corto							
24. Que si se presenta un problema o dificulta se resuelva inmediatamente							
25. Que durante su atención en el consultorio se respete su privacidad							
26. Que el médico u otro profesional que le atenderá le realice un exámen físico completo y minucioso							
27. Que el médico u otro profesional le brinde el tiempo necesario para contestar sus dudas y preguntas sobre su problema de salud que motiva su atención							
28. Que el médico u otro profesional que le atenderá le inspire confianza							
29. . Que el médico u otro profesional que le atenderá le trate con amabilidad, respeto y paciencia							
30. Que el personal de caja/farmacia le trate con amabilidad, respeto y paciencia							
31. Que el personal de admision le trate con amabilidad, respeto y paciencia							
32. Que usted comprenda la explicación que le brinadará el médico u otro profesional sobre su salud o resultado de la atención							
33. Que usted comprenda la explicación que le brinadará el médico u otro profesional sobre el tratamiento que recibirá y los cuidados para su salud							
34. Que los carteles, letreros y flechas del establecimiento sean adecuados para orientar a los pacientes y acompañantes							
35. Que el consultorio y la sala de espera se encuentren limpios y cuenten con							

mobiliario (bancas y sillas) para comodidad de los pacientes							
36. Que el centro de salud cuente con baños limpios para los pacientes							
37. Que los consultorios cuenten con los equipos disponibles y materiales necesarios para su atención							

d) Percepciones : Califique entre 1 y 7 cada una de las siguientes preguntas relacionadas con la atención que usted ha recibido en la consulta externa. Considere a 1 como la menor calificación y 7 como la mayor calificación

	1	2	3	4	5	6	7
38. ¿Usted fue atendido sin diferencia alguna en relacion con otras personas?							
39. ¿Su atención se realizó en orden y respetando el orden de llegada?							
40. ¿Su atención se realizó según el horario programado?							
41. ¿Cuando usted quiso presentar alguna queja o reclamo el establecimiento contó con los mecanismos para atenderlos?							
42. ¿La farmacia contó con los medicamentos que recetó el medico?							
43. ¿La atención en el area de caja/farmacia fue rápida?							
44. ¿La atención en area de admision fue rápida?							
45. ¿El tiempo que usted esperó para ser atendido en el consultorio fue corto?							
46. ¿Cuando usted presentó algún problema o dificultad se resolvió inmediatamente?							
47. ¿Durante su atención en el consultorio se respetó su privacidad ?							
48. ¿El médico u otro profesional que le atenderió le realizó un exámen físico completo y minucioso?							
49. ¿El médico u otro profesional que le atendió, le brindó el tiempo necesario para contestar sus dudas y preguntas?							
50. ¿El médico u otro profesional que le atenderió le inspiró confianza?							
51. ¿El médico u otro profesional que le atendió le trató con amabilidad, respeto y paciencia ?							
52. ¿El personal de caja/farmacia le trató con amabilidad, respeto y paciencia?							
53. ¿El personal de admisión le trató con amabilidad, respeto y paciencia?							
54. ¿Usted comprendió la explicación que le brinadó el médico u otro profesional sobre su salud o resultado de la atención?							

55. ¿Usted comprendió la explicación que el médico u otro profesional le brindó sobre el tratamiento que recibirá y los cuidados para su salud ?							
56. ¿Los carteles, letreros y flechas del establecimiento fueron adecuados para orientar a los pacientes y acompañantes ?							
57. ¿El consultorio y la sala de espera se encuentraron limpios y contaron con bancas y sillas para su comodidad?							
58. ¿El centro de salud contó con baños limpios para los pacientes?							
59. ¿El consultorio donde fue atendido contó con los equipos disponibles y materiales necesarios para su atención ?							

V. **Tiempo de espera**

60. A qué hora (aproximadamente) llegó usted al centro de salud ? _____
61. A qué hora pasó consulta con el médico ? _____
62. Usted siente que su tiempo de espera fue :
    1. Corto 2. Normal 3. Largo
63. Duración de la consulta médica : _____ minutos
64. Tiempo de espera : _____ minutos

VI. **Otras informaciones**

65. Es la primera vez que visita este centro de salud ?
    2. Si 2. No
66. Para su problema de salud actual, es la primera vez que visita un centro de salud ?
    2. Si 2. No
67. Usted tiene seguro de salud ?
    1. Si 2. No
68. Si la respuesta fue Si en la pregunta anterior, Qué tipo de seguro de salud tiene usted ?
    1. SIS 2. ESSALUD 3. Privado
69. Si tiene SIS, hoy utilizó el SIS para pasar consulta ?
    1. Si 2. No
70. Usted fue atendido por :
    1. Médico 2. Enfermera 3. Obstetriz 4. Enfermera técnica-auxiliar
    5. Odontologo 6. Psicologo 7. Nutricionista 8. Otro : _____

Appendix 8. Health worker's questionnaire (English)

Job satisfaction of healthcare workers

I. Overview

1. Date of completion of the survey (dd / mm / yyyy): ____ / ___ / _____

2. Occupational group to which you belong:
   a) Healthcare Professional b) Healthcare Technician
   c) Administrative d) Other (specify): _____

3. What is your position in the health center? _____

II. Socio-demographic characteristics

4. Age: ____

5. Sex: 1. Male 2. Female

6. Educational Level:
   1.Primary 2. Secondary 3. Technical 4. University 5. Postgraduate

Total years of education completed (include school, technical school, university): _____

7. Marital status:
   1. Single 2. Married 3. Cohabiting 4. Divorced
5. Widowed

III. Employment Information

8. How many years have you worked in this facility? _____ Years _____ months

9. How many years have you been working in the field of health? ___ Years __ months

10. What type of contract do you have?
    1.Permanent 2. Contract for services 3. Third-party

11. How is your work schedule?

    1.How many days per week : _____ days

    2.Hours: _____ (am / pm) at _____ (am / pm)

12. Do you have administrative functions?

    1.Yes 2. No

13. Do you have another job in the private health care sector?

    1. Yes 2. No

IV. Job Satisfaction

Statements related to your work are presented below. Please mark with a cross (X) the answer which you consider best expresses your current situation. There is no good or bad answer, as they are all valid point of views.

TOTALLY AGREE (TA), AGREE (A) UNCERTAIN (U), DISAGREE (D) TOTALLY DISAGREE (TD)

Statement	TA	A	U	D	TD
14. The physical layout of the work environment enables my duties' performance.					
15. My salary is very low for the work I do.					
16. I feel that the work I do is for the way I am.					
17. The work I do is as valuable as any other.					
18. I feel bad with what I earn.					
19. I feel mistreated by the institution.					
20. I feel useful for the work I do.					
21. The environment where I work is comfortable (ventilation, lighting)					
22. The salary that I have is quite acceptable.					
23. The feeling I have about my job is that I'm being exploited.					
24. I prefer to take distance from the people I work with.					
25. I dislike my schedule.					
26. I perceive the tasks I perform as unimportant.					

27.	Getting along with the boss benefits the quality of work.					
28.	The comfort of the work environment is unmatched.					
29.	My job allows me to cover my economic expectations.					
30.	The work schedule makes me uncomfortable.					
31.	I am pleased with the results of my work.					
	Statement	TA	A	U	D	TD
32.	Sharing work with other collegues makes me bored.					
33.	I feel comfortable in the physical environment where I work.					
34.	My job makes me feel fulfilled as a person.					
35.	I like the work I do.					
36.	Working materials are available for a good performance of daily tasks.					
37.	I dislike that my work is being limited to not to recognize overtime.					
38.	Doing my job makes me feel good about myself.					
39.	I like the activity I do.					
40.	My boss appreciates the effort I put into my work.					

Thank you very much for your cooperation

Appendix 9. Health worker's questionnaire (Spanish)

Satisfacción laboral del personal de salud

V. Información general

1. Fecha de llenado de la encuesta (dd/mm/aaaa): ____/___/_____

2. Grupo ocupacional al que pertence :
   a) Profesional asistencial b) Técnico asistencial
   c) Profesional administrativo d) Otros (especifique) : _____

3. Cuál es su cargo estructural? _____

VI. Características socio-demográficas

4. Edad: ____

5. Sexo: 1. Masculino 2. Femenino

6. Nivel de educación:
   1. Primaria 2. Secundaria 3. Técnico 4. Universitario
   5. Post-grado

   Número total de años de estudio (incluir colegio, instituto, universidad): _____

7. Estado civil :
   1. Soltero(a) 2. Casado(a) 3. Conviviente 4. Divorciado(a)
5. Viudo(a)

VII. Información laboral

8. Cuántos años ha trabajado en este centro de salud ? _____ años _____ meses

9. Cuántos años ha estado trabajando en el área de la salud ? _____ años ____ meses

10. Qué tipo de contrato tiene usted ?

1. Nombrado 2. CAS 3. Terceros

11. Cuál es su horario de trabajo?
    1. Cuántos días a la semana : _____ días
    2. Horario : de _____ (am/pm) a _____ (am/pm)

12. Ud. tiene funciones administrativas ?
    1. Si 2. No

13. Ud. trabaja en algún otro centro de salud, consultorio privado ?
    1. Si 2. No

VIII. Satisfacción laboral

A continuación se presenta una serie de opiniones vinculadas al trabajo y a su actividad en la misma. Le agradeceremos nos responda su opinión marcando con un aspa (X) en la que considere expresa mejor su punto de vista. No hay respuesta buena ni mala ya que todas son opiniones.

TOTAL ACUERDO (TA), DE ACUERDO (A), INDECISO (I), EN DESACUERDO (D), TOTAL DESACUERDO (TD)

Enunciado	TA	A	I	D	TD
14. La distribución física del ambiente de trabajo facilita la realización de mis labores.					
15. Mi sueldo es muy bajo para la labor que realizo.					
16. Siento que el trabajo que hago es justo para mi manera de ser.					
17. La tarea que realizo es tan valiosa como cualquier otra.					
18. Me siento mal con lo que gano.					
19. Siento que recibo de parte de la institución “mal trato”.					
20. Me siento útil con la labor que realizo.					
21. El ambiente donde trabajo es confortable (ventilación,iluminación)					
22. El sueldo que tengo es bastante aceptable.					
23. La sensación que tengo de mi trabajo es que me están					

explotando.					
24. Prefiero tomar distancia con las personas que trabajo.					
25. Me disgusta mi horario.					
26. Las tareas que realizo las percibo como algo sin importancia.					
27. Llevarse bien con el jefe, beneficia la calidad del trabajo.					
28. La comodidad del ambiente de trabajo es inigualable.					
Enunciado	TA	A	I	D	TD
29. Mi trabajo me permite cubrir mis expectativas económicas					
30. El horario de trabajo me resulta incómodo.					
31. Me complace los resultados de mi trabajo.					
32. Compartir el trabajo con otros compañeros me resulta aburrido					
33. En el ambiente físico en el que laboro me siento cómodo.					
34. Mi trabajo me hace sentir realizado como persona					
35. Me gusta el trabajo que realizo.					
36. Existen las comodidades para un buen desempeño de las labores diarias. (materiales y/o inmuebles)					
37. Me desagrada que limiten mi trabajo para no reconocer las horas extras					
38. Haciendo mi trabajo me siento bien conmigo mismo.					
39. Me gusta la actividad que realizo.					
40. Mi jefe valora el esfuerzo que pongo en mi trabajo.					

Muchas gracias por su colaboración

Appendix 10: Informed consent form (English)

Study Title: Patients' satisfaction and health workers' job satisfaction: related factors and their association in Callao, Peru

Informed Consent Form

We are conducting an investigation to determine patients' satisfaction with health care services and to determine health workers' job satisfaction in the primary health care centers. The importance of participating in this study is to help in determining what measures could be established to improve both health care quality, as well as the work environment of healthcare personnel.

Participants will be patients attending primary health care centers within the Callao region, and healthcare personnel working in these centers. The number of participants in this study is approximately 1600 patients and 400 health workers.

About your participation

If you agree to participate, we would like you to answer a questionnaire through an interview that may last 20-25 minutes. During this interview, you will be asked about your perception and expectations about health care services in the primary health care center.

Confidentiality

All the information obtained will remain confidential, and only researchers directly related to this study will have access to the information. Your name or any information that can identify you will not appear in any final report of the study.

Risks and benefits

This study does not imply any risk for you.

Your participation will help us to determine the measures that could be established to improve the quality of health care provided in the health centers.

The decision to participate in this study is yours alone. Participation is completely voluntary. You can choose not to participate, or withdraw from the study at any time. Your decision will not affect in any way your current or subsequent health service you receive.

This study has been approved by the Ethics Committee of the Regional Health Authority of Callao. If you have any questions you can contact Dr. Tamy Yamamoto, principal researcher of this study at the following number 945-006-373.

I HAVE READ AND UNDERSTOOD the information; I have been INFORMED in a respectful and understandable way about the need for the interview previously detailed. They have answered my questions clearly. Therefore, I GIVE AUTHORIZATION AND AGREE TO PARTICIPATE in this study VOLUNTARILY.

Name of the participant

_____	_____	
Signature	Date	Thumbprint

Appendix 11: Informed consent form (Spanish)

Título del estudio: "Satisfacción del paciente y satisfacción laboral del personal de salud: factores relacionados y su asociación en la región Callao, Peru"

Consentimiento Informado

Estamos realizando una investigación para conocer el nivel de satisfacción de los pacientes con la atención en salud, y asimismo conocer el nivel de satisfacción laboral del personal de salud. La importancia de participar en este estudio es colaborar para poder determinar qué medidas se podrían establecer para mejorar tanto la calidad de la atención, asi como el ambiente laboral del personal de salud.

Los participantes serán los pacientes que acuden a los centros de salud de la región Callao y el personal de salud que labora en estos centros. El número de participantes en este estudio es de aproximadamente 1600 pacientes y 400 trabajadores del area de salud.

En qué consistirá su participación

Si usted acepta participar, se le pedirá que responda un cuestionario a través de una entrevista de 20 – 25 minutos de duración. Se le realizarán preguntas sobre su percepción y expectativas de la atención en el centro de salud.

Confidencialidad

Toda la información que usted brinde será mantenida en estricta confidencialidad y privacidad, teniendo acceso a ella solamente los investigadores directamente relacionados con este estudio. Ni su nombre ni cualquier información que lo identifique, figurarán en ningún informe final ni público sobre el estudio.

Riesgos y beneficios

Este estudio no implica ningún riesgo para usted.
Su participación en este estudio ayudará a poder determinar qué medidas se podrían establecer para mejorar la calidad de la atención

La decisión de participar en este estudio es sólo suya. Usted puede escoger no participar o abandonar este estudio en cualquier momento, su decisión no afectará de modo alguno su atención actual o posterior en el centro de salud al que usted acude.

Este estudio ha sido aprobado por el Comité de Ética de la Dirección Regional de Salud del Callao. Si usted tuviese alguna pregunta podrá contactar a la Dra. Tamy Yamamoto, investigadora principal de este estudio, al teléfono 945-006-373.

HE LEÍDO Y COMPRENDIDO la información, me han INFORMADO de forma respetuosa y comprensible de la necesidad de una realizar una entrevista que anteriormente se detalla. Han CONTESTADO A MIS PREGUNTAS en forma clara. Por lo que DOY MI AUTORIZACIÓN Y ACEPTO PARTICIPAR en el presente estudio en forma VOLUNTARIA.

Nombre del Participante

Firma Fecha Huella Digital

Appendix 12: Ethical approval from Callao Health Directorate, Peru

H.R
007579

GOBIERNO REGIONAL DEL CALLAO

DIRECCION REGIONAL DE SALUD DEL CALLAO

"Decenio de las Personas con Discapacidad en el Perú"
"Año de la Inversión para el Desarrollo Rural y la Seguridad Alimentaria"

09 MAY 2013

OFICIO Nº 1782 2013-DG/ DIRESA CALLAO/COM. ETIC. INV.

Señorita Doctora
Tamy SofíaYamamoto Kohatsu
Facultad de Salud Global y Comunitaria
Universidad de Tokio
Presente.-

De mi consideración:

Tengo el agrado de dirigirme a usted, para saludarle cordialmente y comunicarle que se ha visto por conveniente aprobar la ejecución del trabajo de investigación "Asociación entre la satisfacción del paciente y la motivación y satisfacción laboral del personal de salud en Centros Públicos y Privados en Callao, Perú".

Sin otro particular, hago propicia la oportunidad para expresarle mis sentimientos de consideración y estima personal.

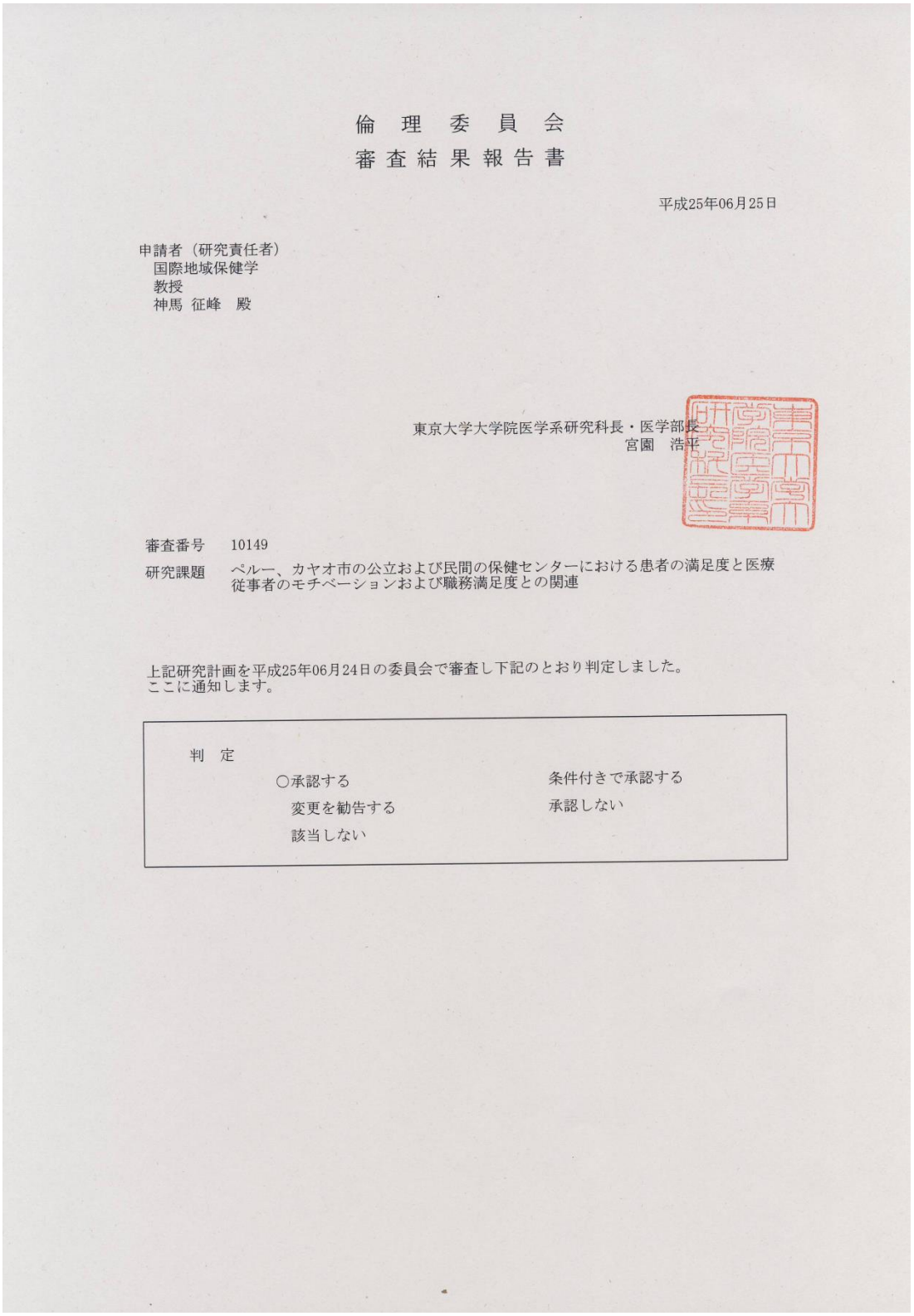
Atentamente,

GOBIERNO REGIONAL DEL CALLAO
DIRECCION REGIONAL DE SALUD DEL CALLAO
Dr. RICARDO ALDO LAMA MORALES
Director General
C.M.P. 12555

RALM/ENA//HOAD/.

www.diresacallao.gob.pe
rhumanos@diresacallao.gob.pe
Jr. Colina Nº 879 Bellavista – Callao
Teléfonos: 4650048-4655279

Appendix 13: Ethical approval from Ethical Research Committee, The University of Tokyo, Japan.



倫　理　委　員　会
審 査 結 果 報 告 書

平成25年06月25日

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研究課題　ペルー、カヤオ市の公立および民間の保健センターにおける患者の満足度と医療従事者のモチベーションおよび職務満足度との関連

上記研究計画を平成25年06月24日の委員会で審査し下記のとおり判定しました。
ここに通知します。

判　定

○承認する
変更を勧告する
該当しない
条件付きで承認する
承認しない