Self-reported experience of Outreach activities amongst undergraduate Oral Health students at a University in South Africa

By

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DECLARATION

I declare that this dissertation titled "**Self-reported experience of Outreach activities amongst undergraduate Oral Health students at a University in South Africa**" is my own original work. Where other people's work has been used, this has been properly acknowledged and referenced. This work has neither been submitted to any university or institute of higher education for degree or examination purposes.

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DEDICATION

This dissertation is dedicated to my husband Igor Kruger for his commitment and support from the beginning of my higher education journey and for having confidence in my achievements. For my mother, Joey da Silva for enduring many adversities and for raising me from the age of nine as a single parent.

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ABSTRACT

Abstract: Outreach activities is regarded as a form of experiential education defined through structured learning experiences, combining intentional learning goals with service to the underserved community through student participation. Oral health students at the University of Pretoria participated in outreach activities on the Phelophepa Train and local school-based programmes performing dental extractions, dental restorations, scaling and polishing and oral health education. The objective of this study was to identify the type and number of dental services that were rendered during outreach activities and to determine if outreach activities contributed to self, social and academic development of the students.

Methods: This was a cross-sectional study and all undergraduate final year dental (N=52) and oral hygiene students (N= 13) enrolled for 2019 at UP, School of Dentistry were invited to participate. Students completed a self-administered modified questionnaire consisting of both open and closed questions after participation in outreach activities. Confidentiality and anonymity was ensured by not asking the students to write down their names or any other variable that might link them to their responses. Ethical clearance was obtained from the University of Pretoria, Ethical Committee. Data was captured on an Excel spreadsheet and then imported onto Statistical Package for the Social Sciences (SPSS) software version 26 for analysis. The analysis was purely descriptive. Quantitative variables included the means, standard deviations, range and percentages of the demographic data; number and type of procedures performed daily on the Phelophepa Train and school outreach; work-related limitations: personal work, self-development and personal development traits; academic development and civic responsibility

Results: The response rate was 93% (N=65). 70.8% were female. The results for both groups of students (dental and oral hygiene) did not indicate any significant differences; however, the Phelophepa Train reported performing more procedures compared to the school activities. Dental students completed more dental examinations 85.5%, screening services 86.6% dental extractions 96.2% and dental restorations 75% on the Phelophepa Train in relation to the local school-based programmes; dental examinations 57.6% screening services 38.4% dental extractions

42.2% and dental restorations 69.2%. Oral hygiene students reported that they completed the same amount of dental examination procedures 69.3% and screening services100% on the Phelophepa Train and local school-based programmes. Oral hygiene 38.5% students completed between one and five fissure sealants at the school-based programmes than on the Phelophepa Train 15.4% and between 11 and 15 scaling and polishing's 7.7% at school-based programmes in comparison to the Phelophepa Train 46.2%. Collectively inadequate materials 100%, infection control 69.3% and defective equipment 56.9% were some of the major work-related concerns experienced. Students reported and agreed that outreach activities encouraged them to develop and improve their independence, accountability, humanitarianism and compassion towards communities and patients. Overall 97% of students reported, that during and after participation of outreach activities they were more responsive to the needs of the attended communities and they believed their motivation to treat underserved communities would contribute immensely to their social responsibility after qualifying as dental professionals.

Conclusion: Overall students were able to perform dental examinations, screening services, dental extractions, oral health education, scaling and polishing's and more while on outreach activities. Students reported on the positive influences that outreach activities had on their personal, self, social development, including their academic and civic responsibility towards the underserved communities. Students reported that teamwork 81.5% on the Phelophepa Train and 38.5% at school outreach projects respectively benefited their personal work experience with eighty percent of students reporting that enhancement of clinical skills were experienced on the Phelophepa Train and 23.1% by school outreach projects respectively.

Students reported their self-development improved due to working independently both on the train 92.3% and at the school outreach 47.7% projects respectively with 66.2% of students on the Phelophepa Train reporting they experienced personal growth compared to 32.3% of students at school outreach. In total 86.1% of students reported, they strongly agreed that their academic curriculum prepared them effectively to work on patients of diverse ethnicity in relation to 13.9% who strongly disagreed with eighty one point six percent of students who strongly agreed they were able to apply their theoretical learning and practical competence skills on the outreach activities

compared to 18.5% students who strongly disagreed. In total 97% of students self-reported they strongly agreed that outreach activities made them more responsive to the needs of the attended communities and 3.1% of students strongly disagreed with ninety-seven percent of students reporting that after qualifying, they would be motivated to contribute to the social responsibility for the underserved communities, however 2.65% of students strongly disagreed with the statement.

Recommendations based on experiences of self-reporting by students included inadequate materials of which seventy four percent and 41.5% of the students reported as one of the most common work-related limitations for the Phelophepa Train and school outreach projects. Additionally students reported defective equipment 30.8% on Phelophepa Train and 38.5% at school outreach including infection control 41.5% at school outreach and 15.4% on Phelophepa Train as important limitations.

Self-reporting by students indicated that the specific objectives of the study which where to; determine the number and type of dental services rendered during outreach activities; determining if outreach activities contributed to self and social development of students and determining if outreach activities contributed to the academic and civic development of students have been achieved as stated. The autonomy to work alone and the exposure to the community encouraged students to develop and improve their independence, accountability, humanitarianism and compassion towards communities and patients. Participants were confident in applying their theoretical learning and practical competence skills during the outreach activities. The results of the survey, taking in the considerable limitations suggest that outreach activities may be important because of the self-reported benefits and positive development traits experienced by students as a result of the outreach activities. Outreach activities demonstrated to have an impact on the personal work, self and academic development and civic responsibility of reporting participants.

Key words: Outreach activities, oral health students, dental services, self and social development, academic, civic responsibility.

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LIST OF ABBREVIATIONS AND ACRONYMS

SA	South Africa
UP	University of Pretoria
BChD	Bachelor of Dental Surgery
BOH	Bachelor of Oral Hygiene
HPCSA	Health Professions Council of South Africa
SoD	School of Dentistry
POHF	Public Oral Health Facility
SADHS	South African Demographic and Health Survey
SPSS	Statistical Package for the Social Sciences
ART	Atraumatic Restorative Treatment
PRR	Preventive Resin Restoration
IPE	Interprofessional Education

CHAPTER 1: INTRODUCTION

1.1 Introduction and study rationale

Outreach activities are a form of experiential education defined as a structured learning experience which combines intentional learning goals for students with service to the community.[1,2] Since the introduction of Community-based education into the undergraduate dental programs it is used increasingly to educate dental students, in such a way that they can both meet the health care needs of their patients and gain a more holistic understanding of the provision of dental care to patients in need.[3,4] Outreach activities in primary care settings are customised to form an integral component in dental schools and their curricula.[5] Students are provided with opportunities to expand their experience away from the secure and protected academic environment [6,7], consequently enhancing student learning and assisting in the development of competence for later dental practice. Students who have participated in outreach activities, reported to have gained additional experience of specific clinical procedures, increase in confidence[8,9] and awareness of career opportunities.

Dental students in South Africa (SA) include dentistry, oral hygiene and dental therapy. At the University of Pretoria (UP), only dentistry and oral hygiene programs are offered and as such, this study only focused on these two cadres. The current dental curriculum for undergraduate dentistry in SA entails a course of five years including an additional one year of compulsory community service. Whereas the oral hygiene curriculum entails a program of three years without compulsory community service. Dental undergraduate students currently enrolled in the Bachelor of Dentistry (BChD) and Bachelor of Oral Hygiene (BOH) programmes at the School of Dentistry, UP are participating in outreach activities as recommended by the Health Professions Council of South Africa (HPCSA) as part of service learning and teaching.[10] These outreach activities take place under the supervision of qualified, registered dentists and oral hygienists via two platforms, viz local school-based programmes in a province in which the dental school is located and the rural population of SA via Phelophepa Train.

The Phelophepa Train project has been given the name “Train of Hope” and has been

operating since 1994 with a single train.[11] To date, an additional train has been added. The two trains operate parallel but on different railway routes to accommodate the entire SA population in providing comprehensive, flexible health care services. The Phelophepa Train is regarded as an outreach activity in a mobile hospital that provides primary healthcare services to the underserved South African communities through various health specialities in the health sector where infrastructure does not allow. The services provided include primary nursing care, dental and oral care, optometry and pharmacology.

The objective of exposing students to different outreach activities is beneficial to students as they gain an understanding on how to apply their knowledge and competencies from an ideal academic teaching setting to a real life setting such as in a rural underprivileged environment. The benefit of understanding students' level of practical and theoretical competencies to perform procedures during outreach activities avoids unrealistic expectations from supervisors of under and over-estimation of student's clinical abilities and skills during these activities. A notable initiative is observed when students are granted an opportunity to be informed by tutors about the level of theoretical learning and practical competency skills expected of them before participating on outreach activities. An additional objective of outreach activity programmes are to address the societal needs experienced by the public through improving their access to oral health care in partnership with oral healthcare providers, dental school programmes and communities.

However, published reports regarding outreach activities are considered as enthusiastic descriptions of plans and projects rather than reflective and objective evaluations of their outcome.[12] In this context it is important to be aware of possible limitations regarding outreach activities and to consider limitations based on objective evaluations of reported data.[12] Limitations might include lack of efficient and productive time management on outreach activities, execution of procedure techniques and applications, limited patient interaction in which classroom teaching and learning is reinforced and lost revenue to the school.[12]

Outreach activities had been introduced into the curriculum of dental undergraduate programmes as early as 1980, and for over 20 years at the school of dentistry (SoD).

It is therefore important to determine if outreach activities enhance the learning experience of dental and oral hygiene undergraduate students at the SoD. Outreach activities play a vital role in exposing students to community issues such as the existing barriers to access dental care for underserved populations, their civic responsibility to communities, academic development and self-confidence when providing dental care to these underserved populations.[13] Through participation and applying learned knowledge in outreach activities, a sense of responsibility is developed towards communities, enriching both oral health care professionals and communities on the reported feedback of experiences to improve and sustain the process and partnership in communities.[14]

Since the inception of the Phelophepa Train, students from the SoD have been sent to the train annually. But the impact that it has on the dental and oral hygiene students from the University of Pretoria has not been evaluated, therefore this study will be the first to evaluate the strengths and weaknesses of students self-reporting on their experience of outreach activities. A similar study conducted by Bhayat *et al* reported on service-learning as being an important component in the education of medical and dental students around the world. The objective of the study was to determine the impact this experience with service-learning had on Final-year dental student's at the University of Witwatersrand, South Africa.[15]

CHAPTER 2: LITERATURE REVIEW

As stated by Booysen, urban–rural inequalities in access to health care services continue to persist in South Africa, and in almost all cases discriminate against the poor.[16] It was reported that, "In certain cases disparities are worse in urban areas, although levels of service delivery admittedly are consistently worse in rural areas. Therefore people in rural areas are generally more dependent on public and other health care services than on private services, compared with people living in urban areas".[16] Data from the South African Demographic and Health Survey (SADHS) (2016) reported that women and men in urban areas are more than twice as likely as those in non-urban areas to have health insurance coverage. Only sixteen percent of women and 17% of men aged 15 and older have access to some form of medical aid, medical benefit scheme, provident scheme, or hospital plan that helps them pay for health care.[17]

The SADHS 2016 was the first national survey to gather information on pain for SA. Respondents were questioned on if they were troubled by pain or discomfort. Those who responded in the affirmative were asked if they had experienced the pain or discomfort for more than three months at the site of the pain or discomfort. In addition the respondents were asked whether their teeth or mouth had caused pain or discomfort in the past 12 months and, if so, whether they got treatment the last time they had the problem and from whom. Reports from the survey indicated there was a prevalence of 11% tooth or mouth pain in the past 12 months and that 57% of the respondents with pain received treatment when having a problem. More than two thirds of the respondents received treatment from a professional oral health care worker (dentist, oral hygienist and dental therapist).[17] Furthermore the respondents reported that the main reason for them not seeking treatment was that the problem went away. Male and female respondents reported that treatment was too expensive, that no service was available and that sites were far to access the treatment as additional reasons for not seeking treatment.[17]

Oral diseases remain a major public health problem in SA because of their high prevalence, severity, and impact on individual quality of life. Noticeably, persistent oral health inequalities in accessing care, burdens the public sector to deliver equitable, cost-effective primary oral preventive services.[18] Oral health planning efforts need to focus on reducing the burden of

oral diseases given the underlying multifactorial determinants of dental caries, namely access to and availability and utilisation of oral health services, socio-economic status and dietary intake. Distinct attention should focus on disadvantaged communities, by promoting healthier lifestyles to address the socio-economic and environmental risks to oral health, and developing policies and strategies that support oral health integration within other national and local health programmes.[19]

Community-based service learning also assist students to take reflection of their own lives and helping them contemplate the impact and significance of economics and public policy. Students learn about their world and their responsibilities.[20] The programme further offer many advantages to contemporary, traditional, dental school programmes. These include providing holistic dental care for patients in a primary care setting, development of practice management skills and working as part of a dental team.[21]

A study by Yoder[22] describes other desirable components of outreach activities such as including the academic link, long-term community partnerships, learning objectives, preparation of students, sustained service, community engagement, ongoing evaluation and improvement, and opportunities for community-engaged scholarship. Other studies reported additional important aspects of outreach activities like interprofessional learning, respect for diversity, multiculturalism[3] and integration into the curriculum for credit.[23]

Smith *et al*, defined outreach as the students providing comprehensive dental care for patients away from the dental school.[24] Undergraduate dental and oral hygiene students at SoD have been participating and providing dental care associated to their unique scope of practice as regulated and determined by the HPCSA. During 2000 and 2013, oral hygienists were allowed to perform and place glass ionomer class V restorations on sensitive dentine or cervical abrasion lesions, perform the splinting of mobile teeth, perform the placement of soft linings in dentures as tissue conditioners, taking of cytological smears for assessing of candida infections, make and produce protective vacuum formed mouth guards: administering of applicable local anaesthetic to name but a few, after the extension of their scope was amended.[25,26]

Clinical procedures and duties for dental and oral hygiene students are predominantly associated with the provision of preventive care. Oral hygiene students perform primarily

preventive procedures such as scaling and polishing, dental screenings, fissure sealants, application of fluorides and education on oral health. However dental students perform all of the procedures that oral hygiene students perform in addition to other, but their treatment includes but is not limited to the physical clinical examination of the oral, maxillofacial and related structures of a person; making a diagnosis of diseases, injuries and conditions of the oral, maxillofacial and related structures, including determining the relevance of systemic conditions, and/or giving advice on such conditions; performing dental procedures and/or prescribing medicines aimed at managing the oral health of a patient, including prevention, treatment and rehabilitation; performing any procedure on a patient aimed at fitting or supplying a dental prosthesis or appliance; and performing any aesthetic or cosmetic procedure on a patient pertaining to the oral and peri-oral area. Similarly to SA dental curricula, dental services have been provided by various dental schools in England, Wales, Finland, the Netherlands, Australia and the USA in clinics and outreach sites away from dental schools. Students spend their days working under supervision in the same way as qualified dentists.[2]

2.1 Activities undertaken during outreach

During the outreach activities undertaken by dental and oral hygiene students on the Phelophepa Train and local school-based programmes, it is expected from students to perform their clinical procedures according to their competence with emphasis on preventive dentistry.[11] Oral hygiene students mostly perform preventative procedures, whilst dental students perform dental restorations and attend to the relief of pain and sepsis. These procedures often take place in environments different to their current training facility but typical of what could be expected in their eventual working environment. The Phelophepa Train is financed by private and public companies and has the approval of the South African government under the auspices of its Department of Health and Social Development. The train operates from 7:30 am to approximately 6:00 pm each day, depending on patient load and type of services.

The train serves underprivileged rural communities throughout SA and provides basic primary oral health care, including relief of pain and sepsis, dental extractions, dental restorations, oral hygiene instructions, scaling and polishing and fluoride applications. Students are transported from their respective Universities to the train residing at the designated towns in the various provinces across SA for two weeks. The train remains

at the allocated station of the designated towns for two weeks and then moves to another location. Annually, the routes and destination of the towns are re-evaluated and the organizers attempt to visit each station once every two years. Whilst the train is stationary in town, all patients' visiting are examined and treated.

2.2 Self and Social development

The undergraduate programmes for dental and oral hygiene students at UP have created a base for oral health students to connect with communities through outreach activities; where inequalities exist in the distribution, accessing and making use of oral health care. These activities endeavour to develop and mould the individual's personal and social development skills simultaneously with their clinical and academic skills.

Daher, Costa and Machado[27] stated, "Studies on dental student's experiences in outreach settings in the United Kingdom have found that the experiences increased student's confidence and competence when treating children". Another study conducted by Hunter *et al* on comparing student's confidence before and after working at a community outreach setting reported that students became more confident to carry out specified procedures following participation in outreach activities than they had been on completion of their paediatric dentistry sessions in the School of Dentistry[28] Rodd *et al* highlighted student's increased clinical experience in pediatric dental procedures and the opportunity to practice specific pediatric dentistry core skills in the community settings.[29] Another retrospective study at The Ohio State University College of Dentistry, USA reported that the increased competence of students was related to the opportunity of exposure to perform more clinical procedures at community-based sites.[30] The majority of previous studies reported on discussed the benefits of pediatric dental education but lacked information on student's confidence and attitude.[27,28,29]

A study conducted in India on the Impact of outreach programmes on personal development of dental students reported that, 52% of the participants agreed that outreach programs helped them to understand the material from their lectures and readings, 47% had definite career plans to implement community service in the future, however 51% of the participants disagreed that outreach program experience was not directly linked to building clinical skills.[13] Students reported that they realized their

teaching and learning within an outreach context was not a neatly structured, a pre-packaged activity with time scheduled activities they were used to in dental school. Working in the outreach setup had increased the participants' self-confidence by engaging themselves solely in managing their assigned duties.[13]

Major *et al* concluded that if outreach activities increase, a growth in student's experiences are observed. The outreach activities develop the self and social development and identity of individuals enhancing their individual potential to contribute to their own personal development. The personal development is a lifelong process to acquire their skills and qualities, consider their aims in life, and set goals to realize and maximize their potential.[31]

2.3 Academic development

Outreach activities constitute an integral component of undergraduate dental programs and an increased recognition over the past 20 years has been observed.[32] Access to these resources benefited student's confidence, competence and extended team working and professionalism through an increase in the quantity and variety of clinical experience. While enhanced clinical experiences are important, other benefits of an outreach program are equally important. These benefits include exposure to particular types of working environments, appreciation for the ethical responsibilities of a dental professional for the oral health of the community, understanding the principles of public health dentistry including their implementation and appreciation.[3] A study by Bhayat *et al* has shown some evidence that outreach activities in the South African context increased student's social responsibility and personal growth following participation in community projects.[15]

The communities that are encountered when on outreach activities are often new and formative experiences for students, who gain an insight into the dental health of these populations arising from cultural, educational and economic factors.[15] Smith *et al* study reported that, they had more work done in the six-weeks on outreach than in two years at the hospital.[33] The study further reported that, students quickly felt part of their dental team and, through individual nursing assistance, appreciated the value of team working where dental students worked with or observed oral hygiene and therapy students or other health professionals; it gave them insights into the others'

capabilities.[34] In addition the new learning environment, volume of clinical work and frequent interactions from working in teams were all believed to enhance and accelerate students' clinical development. The student reported they missed little by being away from the School.[33]

Internationally the purpose of intensified and improved clinical operative skills on outreach activities experienced in primary care programmes have corresponded in accordance. Randomised controlled trials conducted by Smith *et al* reported that, the students who experienced both the dental school clinic training and an outreach clinical placement were more confident in tackling clinical situations, compared to students who trained only at the dental school clinic.[34] Another study also reported that students who had been exposed to outreach activity experiences were more likely to produce higher totals in noting the social history of their patients during examination and developing an appropriate treatment plan.[35] A follow-up study conducted of graduates at a dental school in Wales by Lynch, Ash, Chadwick and Hannigan reported that students felt the outreach teaching program played an important role in their professional development[36] and subsequent clinical careers.

2.4 Civic responsibility

It is well documented that dental students often enter dental training with traits of idealism, which includes compassion, humanitarianism, and desire to work with the underserved, yet these traits decline by the time, they progress through years of training.[2] Indeed, preparing dental professionals who accept a civic responsibility to provide care for underserved populations is increasingly seen as one of the duties of dental schools.[37] Smith *et al* argued that access to oral health care for underserved populations could possibly be increased if dental students were more overtly educated about the importance of treating patients from all segments of society. Education and experiences gained in dental school may impact dental students' attitudes towards underserved populations.[38]

The process of professional identity formation is not the same for everyone. People differ in how deeply their personal morals and ethics penetrate self-understanding. A study by Novak *et al* reported a different perspective that dental education can better

prepare the workforce of the future by increasing student's awareness and understanding of the diverse society in which we live and the responsibility to treat patients from all segments of society.[39] Educational strategies have been utilized in dental and oral hygiene programmes to develop student's competence in treating diverse patient populations and in addition to broaden their understanding of the social determinants of health. Therefore increasing their self-efficacy in understanding how they as oral health students and eventually as practitioners can make an impact on patients' lives.

Several studies reported that some dental oral hygiene programmes have found that community-based outreach activities facilitate the personal and professional development of dental and oral hygiene students. Specifically, these educational strategies have been found to increase student's awareness of underserved populations, positively influence their attitudes about an individual's right to access dental care, increase their self-efficacy in providing care for diverse populations, and increase their empathy.[40,41]

CHAPTER 3: METHODOLOGY

3.1 Aim of the study

The aim of the study was to evaluate the impact of self-reported experiences of Outreach activities amongst undergraduate dental and oral hygiene students of the University of Pretoria.

3.2 Objectives

The objectives were to,

a) identify the type and number of dental services that were rendered during outreach activities.
b) determine if outreach activities contributed to self and social development.
c) determine if outreach activities contributed to the academic development.
d) determine if outreach activities contributed to civic responsibility.

3.3 Methods

3.3.1 Study design

A cross-sectional survey study design was used.

3.3.2 Study population

The study was conducted amongst all undergraduate BChD V and BOH III students who were registered at the University of Pretoria during the 2019 academic year.

3.3.3 Study setting

The study was conducted at UP, School of Dentistry.

3.3.4 Inclusion criteria

All undergraduate final year dental and oral hygiene students enrolled for 2019 at UP, School of Dentistry were invited to participate. These students were selected as they were the only group who participated in the outreach activities undertaken at the Phelophepa Train and school-based outreach activities.

3.4 Sampling

No sampling was required as all final year dental and oral hygiene students registered in 2019, were invited to participate in the study.

3.5 Data collection tools

The data was collected using a self-administered modified questionnaire (Appendix A) consisting of both open and closed questions.[42,43] It was in the English language and was handed out after lectures. The questionnaire consisted of five sections and 42 questions in total. Demographic information provides data regarding research participants and is necessary for the determination of whether the individuals in a particular study are a representative sample of the target population for generalization purposes.[44]

Section A asked demographic questions (Questions 1 to 4). Students were asked to self-report their age in years, their gender (Male=1, Female=2), race (Asian=1, Black=2, Coloured=3, Indian=4, Multiracial=5, White=6, Other=7). They also had to indicate the undergraduate programme they are enrolled in (BChD V=1, BOH III=2).

Section B asked questions about the students Phelophepa Train experience. Students were asked to indicate if they had an opportunity to attend the Phelophepa Train (Question 5) (Yes=1, No=2.) Those who responded “Yes” were asked to answer questions 6 to 18 as well. If they answered “No” they had to start answering from question 19. They had to name the station they were based at (Question 6) and had to indicate who handled the transport arrangements for the outreach (Own arrangements=1, Train personnel=2, University personnel=3) (Question 7). They also had to mark who did the logistical arrangements for the placement for (Own arrangements=1, Train personnel=2, University personnel=3) (Question 8).

Question 9 and 10, respectively, asked students to self-report on the type and frequency of procedures performed on the Phelophepa Train on a daily basis. Students had to mark all the procedures they completed as follows: Examinations=1, Screening=2, Extractions=3, Restorations=4, Scaling and polishing=5, Oral hygiene education=6, Fissure sealants=7, Desensitising=8 and Other=9, which had to be specified (Question 9). They subsequently had to report the number of each of these procedures by selecting one of the following categories: (0; 1-5; 6-10; 11-15 and more than 16). In case of the last category they had to specify the amount (Question 10).

Question 11 and 12 elicited information about work-related limitations. Students had to mark all the work-related limitations they encountered on the Phelophepa Train: Time constraints=1, Inadequate materials=2, Defective equipment=3, Heavy workload=4, Infection control=5, Accommodation=6, Transport=7, Lack of supervision=8, No work related limitation experienced=9 and Other=10, which had to be specified. Question 11 allowed for students to tick more than one applicable work-related limitation and Question 12 allowed for students to choose one most relevant work-related limitation chosen in previous question.

Question 13 and 14 elicited information about personal work benefits. Students had to mark all the personal work benefits they encountered: on the Phelophepa Train: Job satisfaction=1, Team work=2, Enhanced clinical skills=3, Patient management=4, Increased patient care=5, Administrative skills=6, No personal work=7 benefit experienced and Other=8, which had to be specified. Question 13 allowed for students to tick more than one applicable personal work benefit and Question 14 allowed for students to choose one most relevant personal work benefit chosen in previous question.

Question 15 and 16 elicited information about traits of self-development. Students had to mark all the traits of self-development they encountered on the Phelophepa Train: Independence=1, Curiosity=2, Optimism=3, Persistence=4, Personal growth=5, Resilience=6, Improved communication=7, Competency=8 and No self-development experienced=9. Question 15 allowed for students to tick more than one applicable self-development trait and Question 16 allowed for students to choose one most relevant self-development trait chosen in previous question.

Question 17 and 18 elicited information about traits of personal development. Students had to mark all the traits of personal development they encountered on the Phelophepa Train: Self-important=1, Disciplined=2, Prejudiced=3, Versatile=4, Impatient=5, Humble=6, Inflexible=7, Resourceful=8 and No personal development experienced=9. Question 17 allowed for students to tick more than one applicable personal development trait and Question 18 allowed for students to choose one most relevant

personal development trait chosen in previous question.

Section C asked questions about the student's school outreach experience. Students were asked to indicate if they had an opportunity to attend the school outreach (Question 19). (Yes=1, No=2.). Those who responded "Yes" were asked to answer questions 20 to 30 as well. If they answered "No" they had to start answering from question 31. They had to name the school they were based at (Question 20).

Question 21 and 22, respectively, asked students to self-report on the type and frequency of procedures performed on the school 0utreach on a daily basis. Students had to mark all the procedures they completed as follows: Examinations=1, Screening=2, Extractions=3, Restorations=4, Scaling and polishing=5, Oral hygiene education=6, Fissure sealants=7, Desensitising=8 and Other=9, which had to be specified (Question 21). They subsequently had to report the number of each of these procedures by selecting one of the following categories: (0; 1-5; 6-10; 11-15 and more than 16). In case of the last category they had to specify the amount (Question 22).

Question 23 and 24 elicited information about work-related limitations. Students had to mark all the work-related limitations they encountered on the school outreach: Time constraints=1, Inadequate materials=2, Defective equipment=3, Heavy workload=4, Infection control=5, Accommodation=6, Transport=7, Lack of supervision=8, No work related limitation experienced=9 and Other=10, which had to be specified. Question 23 allowed for students to tick more than one applicable work-related limitation and Question 24 allowed for students to choose one most relevant work-related limitation chosen in previous question.

Question 25 and 26 elicited information about personal work benefits. Students had to mark all the personal work benefits they encountered: on the school outreach: Job satisfaction=1, Team work=2, Enhanced clinical skills=3, Patient management=4, Increased patient care=5, Administrative skills=6, No personal work benefit experienced=7 and Other=8, which had to be specified. Question 25 allowed for students to tick more than one applicable personal work benefit and Question 26

allowed for students to choose one most relevant personal work benefit chosen in previous question.

Question 27 and 28 elicited information about traits of self-development. Students had to mark all the traits of self-development they encountered on the school outreach: Independence=1, Curiosity=2, Optimism=3, Persistence=4, Personal growth=5, Resilience=6, Improved communication=7, Competency=8 and No self-development experienced=9. Question 27 allowed for students to tick more than one applicable self-development trait and Question 28 allowed for students to choose one most relevant self-development trait chosen in previous question.

Question 29 and 30 elicited information about traits of personal development. Students had to mark all the traits of personal development they encountered on the school outreach: Self-important=1, Discipline=2, Prejudiced=3, Versatile=4, Impatient=5, Humble=6, Inflexible=7, Resourceful=8 and No personal development experienced=9. Question 29 allowed for students to tick more than one applicable personal development trait and Question 30 allowed for students to choose one most relevant personal development trait chosen in previous question.

Section D asked questions about the student's Academic Development. Students were asked to put an **X** at the number that they feel is most accurate. Question 31 elicited information from students if their academic curriculum prepared you effectively to work on patients of diverse ethnicity and background: Strongly disagree=1, Disagree=2, Agree=3 and Strongly agree=4. Before starting the outreach activities, your tutors informed you about the level of theoretical learning and practical competence skills on the outreach activities: Strongly disagree=1, Disagree=2, Agree=3 and Strongly agree=4. (Question 32). You were able to apply your theoretical learning and practical competence skills on the outreach activities: Strongly disagree=1, Disagree=2, Agree=3 and Strongly agree=4. (Question 33).

Question 34 elicited information from students on if they found outreach experiences compared to Dental school clinical routines more challenging: Strongly disagree=1,

Disagree=2, Agree=3 and Strongly agree=4. After participation of outreach activities, do you experience taking accountability for your own learning: Strongly disagree=1, Disagree=2, Agree=3 and Strongly agree=4 (Question 35).

(Question 36) elicited information from students on if their experience with other disciplines on outreach activities improve your awareness: Strongly disagree=1, Disagree=2, Agree=3 and Strongly agree=4. Did you learn more comprehensive patient care skills on outreach activities than in contrast to the Dental school where specialized care is grouped to different speciality departments: Strongly disagree=1, Disagree=2, Agree=3 and Strongly agree=4 (Question 37).

Section E asked questions about the student's Civic Responsibility. Students were asked to put an **X** at the number that they feel is most accurate. Question 38 elicited information on if outreach activities that you participated in, make you more responsive to the needs of the attended communities: Strongly disagree=1, Disagree=2, Agree=3 and Strongly agree=4. After qualifying, would you be motivated to contribute to the social responsibility for the underserved communities: Strongly disagree=1, Disagree=2, Agree=3 and Strongly agree=4 (Question 39). Do you feel obligated to contribute to the community by rendering dental services on outreach activities: Strongly disagree=1, Disagree=2, Agree=3 and Strongly agree=4 (Question 40).

Question 41 elicited information on if students experienced a responsibility and moral obligation to the community and the people after participation in outreach activities: Strongly disagree=1, Disagree=2, Agree=3 and Strongly agree=4. After participation in the outreach activities, do you experience concern for the community and the people who are suffering from a lack of resources: Strongly disagree=1, Disagree=2, Agree=3 and Strongly agree=4(Question 42).

The questionnaire was administered to participants by the researcher at the study setting and the need for consent was explained. The researcher explained the outline of the questionnaire and answering format. Participants were allowed to ask for

clarification on their misinterpretation of questions and answering format. The questionnaire was completed anonymously and was assigned a unique serial number.

3.6 Data capturing and statistical tests utilized

Data was captured on an Excel spreadsheet and then imported onto Statistical Package for the Social Sciences (SPSS) software version 26 for analysis. The analysis was purely descriptive. Quantitative variables included the means, standard deviations, range and percentages of the demographic data; number and type of procedures performed daily on Phelophepa Train and school outreach; work-related limitations: personal work, self-development and personal development traits; academic development and civic responsibility. The mean age and standard deviation was calculated while all other results from Question 4 to Question 42 on the questionnaire were reported by means of frequency distributions.

3.7 Ethical considerations

Ethical clearance and permission to conduct the study was obtained from the University of Pretoria, Research Ethics Committee of the Faculty of Health Sciences (643/2019) (Appendix D). The participant consent form (Appendix B) and permission form of the CEO of the Oral and Dental Hospital (Appendix C) received ethical clearance. All information was strictly confidential.

CHAPTER 4: RESULTS

4.1 Response rate and demographic characteristics

Seventy students met the criteria and all received a questionnaire. Of these, 65 (93%) signed the consent forms and completed the questionnaire. The gender demographic information is summarized in Figure 1. The mean age of the participants was 22.66yrs (SD=±5.46yrs) and 70.8% were females. Of the participants, 80% were dental and 20% were oral hygiene students.

Figure 1: Gender distribution of participants

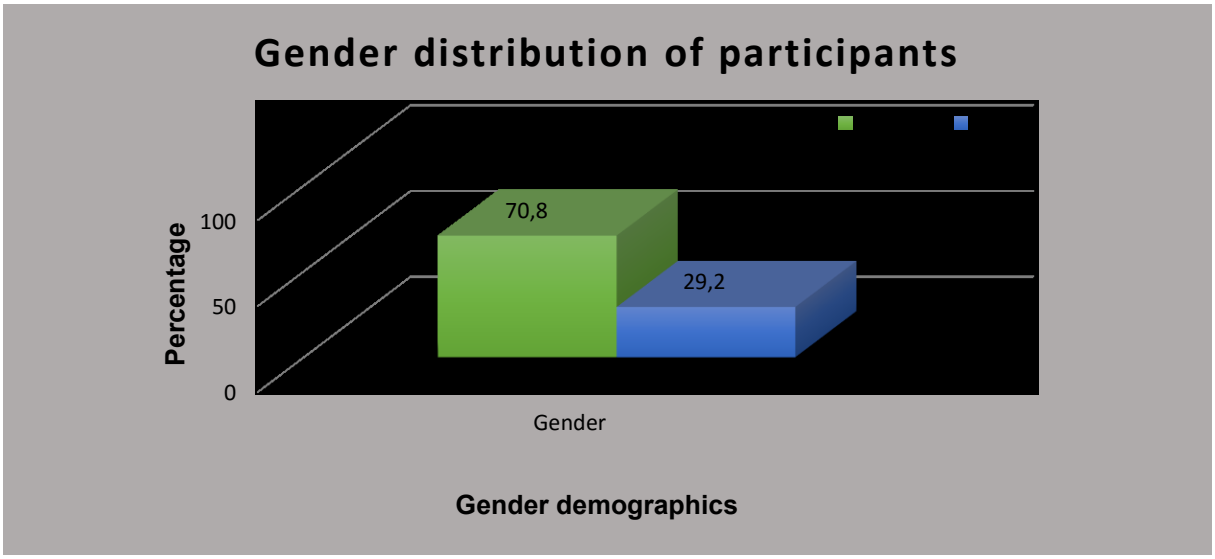


Table 1: Participant's demographic characteristics

Mean age (±SD) 22.66 (±5.46)	
Course	
BChD 52 (80%)	BOH 13 (20%)

4.2 Activities undertaken during outreach activities

There were two sites at which students performed their outreach activities; the Phelophepa Train and the local school-based programmes. Students reported that they completed various clinical activities which included dental examinations, screening services, dental extractions, scale and polishing, oral hygiene education, dental restorations, fissure sealants, desensitizing, Atraumatic Restorative Treatment

(ART) and Preventative Resin Restorations (PRR). Extractions was the only procedure not performed by OH students on the Train and the local school-based programmes.

4.2.1 Self-reported number of procedures performed daily by BChD students on the Phelophepa Train

A total of 28.8% of students reported that they completed more than 16 dental examinations on a daily basis. Moreover, 23.1%, 26.9% and 7.7% reported that their daily rate for dental examinations were 11 to 15, six to ten and one to five, respectively. Only 13.5% did not complete a dental examination on a daily basis. Sixty three point five percent of students in turn reported that they participated in screening services more than 16 times a day, while 11.5%, 5.8%, and 5.8% respectively performed 11 to 15, six to ten and one to five screenings daily. Seven students (13.5%) reported that they did not perform daily screenings. The self-reports for dental extractions indicated that 30.8% performed more than 16 tooth extractions per day while 30.8%, 26.9% and 7.7% respectively performed 11 to 15, six to ten and one to five dental extractions daily. Two students (3.8%) reported that they did not perform dental extractions daily. Three students (5.8%) reported that that they completed more than 16 dental restorations, while 5.8%, 1.9% and 61.5% respectively performed 11 to 15, six to ten and one to five dental restorations. Self-reports for dental restorations indicated that 23.1% of students did not perform any dental restoration procedures.

A total of 23.1% students reported that they completed more than 16 scaling and polishing's on a daily basis. Moreover, 36.5%, 28.8% and 9.6% reported that their daily rate for scaling and polishing's were 11 to 15, six to ten and one to five, respectively. Only 1.9% did not complete scaling and polishing's on a daily basis. Seven point seven percent of students in turn reported that they participated in Oral Hygiene education motivations more than 16 times a day, while 46.2%, 17.3%, and 9.6% respectively performed 11 to 15, six to ten and one to five Oral Hygiene education motivations daily. Ten students (19.2%) reported that they did not perform Oral Hygiene education motivations daily. The self-reports for fissure sealants indicated that 0.0% performed more than 16 tooth fissure sealants per day while 3.8%, 0.0% and 15.4% respectively performed 11 to 15, six to ten and one to five fissure sealants daily. More than 42 students (80.8%) reported that they did not perform fissure sealants daily. One student (1.9%) reported that they completed more than 16 desensitize applications, while

0.0%, 7.7% and 17.3% respectively performed 11 to 15, six to ten and one to five desensitize applications. Self-reports for desensitize applications indicated that 73.1% students did not perform any desensitize applications. The self-reports for ART and PRR indicated that 0.0% performed more than 16 ART and PRR procedures per day while 0.0%, 0.0% and 0.0% respectively performed 11 to 15, six to ten and 1 to 5 ART and PRR procedures daily. Overall 52 students reported they did not perform ART and PRR procedures daily.

Table 2: Self-reported number of procedures performed daily by BChD students on the Phelophepa Train (n=52)

	Examination	Screening	Extraction	Restoration	Scale and polish	OH Education	Fissure seal	Desensitize	ART	PRR
None	7 (13.5%)	7 (13.5%)	2 (3.8%)	12 (23.1%)	1 (1.9%)	10 (19.2%)	42 (80.8%)	38 (73.1%)	52 (100%)	52 (100%)
1 to 5	4 (7.7%)	3 (5.8%)	4 (7.7%)	32 (61.5%)	5 (9.6%)	5 (9.6%)	8 (15.4%)	9 (17.3%)	0 (0.0%)	0 (0.0%)
6 to 10	14 (26.9%)	3 (5.8%)	14 (26.9%)	1 (1.9%)	15 (28.8%)	9 (17.3%)	0 (0.0%)	4 (7.7%)	0 (0.0%)	0 (0.0%)
11 to 15	12 (23.1%)	6 (11.5%)	16 (30.8%)	3 (5.8%)	19 (36.5%)	24 (46.2%)	2 (3.8%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
More than >16	15 (28.8%)	33(63.5%)	16 (30.8%)	3 (5.8%)	12 (23.1%)	4 (7.7%)	0 (0.0%)	1 (1.9%)	0 (0.0%)	0 (0.0%)

4.2.2 Self-reported number of procedures performed daily by OH students on the Phelophepa Train

A total of 30.8% of students reported that they completed more than 16 dental examinations on a daily basis. Moreover, 7.7%, 23.1% and 7.7% reported that their daily rate for dental examinations were 11 to 15, six to ten and one to five, respectively. More than 30.8% did not complete a dental examination on a daily basis. Ninety two point three percent of students in turn reported that they participated in screening services more than 16 times a day, while 0.0%, 7.7%, and 0.0% respectively performed 11 to 15, six to ten and one to five screening services daily. Zero percent of students reported that they did not perform daily screening services. Zero percent of students reported that that they completed more than 16 dental restorations, while 7.7%, 7.7% and 0.0% respectively performed 11 to 15, six to ten and one to five dental restorations. The self-reporting for dental restorations indicated that 84.6 % students did not perform any dental restoration procedures. A total of 30.8% students reported that they completed more than 16 scaling and polishing's on a daily basis.

Moreover, 46.2%, 15.4% and 7.7% reported that their daily rate for scaling and polishing's were 11 to 15, six to ten and one to five, respectively. Zero percent students did not complete scaling and polishing's on a daily basis. Sixty one point five percent of students in turn reported that they participated in Oral Hygiene education motivations more than 16 times a day, while 23.1%, 15.4%, and 0.0% respectively performed 11 to 15, six to ten and one to five Oral Hygiene education motivations daily. Zero percent of students reported that they did not perform daily Oral Hygiene education motivations. The self-reports for fissure sealants indicated that 0.0% performed more than 16 tooth fissure sealants per day while 0.0%, 15.4% and 15.4% respectively performed 11 to 15, six to ten and one to five fissure sealants daily. Self-reports for fissure sealants indicated that 69.2% students did not perform fissure sealants daily.

Zero percent of students reported that they completed more than 16 desensitize applications, while 0.0%, 0.0% and 30.8% respectively performed 11 to 15, six to 10 and one to five desensitize applications. Self-reports for desensitize applications indicated that 69.2% students did not perform any desensitize applications. Self-reports for ART and PRR procedures indicated that 0.0% performed more than 16 ART

and PRR procedures per day while 0.0%, 0.0% and 7.7% respectively performed 11 to 15, six to ten and one to five Art and PRR procedures daily. Ninety-two point three students reported they did not perform ART and PRR procedures daily.

Table 3: Self-reported number of procedures performed daily by OH students on the Phelophepa Train (N=13)

	Examination	Screening	Restorations	Scale and polish	OH Education	Fissure seal	Desensitize	ART	PRR
None	4 (30.8%)	0 (0.0%)	11 (84.6%)	0 (0.0%)	0 (0.0%)	9 (69.2%)	9 (69.2%)	12 (92.3%)	12 (92.3%)
1 to 5	1 (7.7%)	0 (0.0%)	0 (0.0%)	1 (7.7%)	0 (0.0%)	2 (15.4%)	4 (30.8%)	1 (7.7%)	1 (7.7%)
6 to 10	3 (23.1%)	1 (7.7%)	1 (7.7%)	2 (15.4%)	2 (15.4%)	2 (15.4%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
11 to 15	1 (7.7%)	0 (0.0%)	1 (7.7%)	6 (46.2%)	3 (23.1%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
More than >16	4 (30.8%)	12 (92.3%)	0 (0.0%)	4 (30.8%)	8 (61.5%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)

4.2.3 Self-reported number of procedures performed daily by BChD students on School Outreach

One student (1.9%) reported that they completed more than 16 dental examinations on a daily basis. Moreover, 3.8%, 9.6% and 42.3% reported that their daily rate for dental examinations were 11 to 15, six to ten and one to five, respectively. Only 42.3% did not complete a dental examination on a daily basis. Eleven point five percent of students in turn reported that they participated in screening services more than 16 times a day, while 3.8%, 5.8%, and 17.3% respectively performed 11 to 15, six to ten and one to five screening services daily. Thirty-two students (61.5%) reported that they did not perform daily screening services. Self-reports for dental extractions indicated that 1.9% performed more than 16 dental extractions per day while 0.0%, 3.8% and 36.5% respectively performed 11 to 15, six to ten and one to five dental extractions daily. Thirty students (57.7%) reported that they did not perform dental extractions daily. Zero percent of students reported that that they completed more than 16 dental restorations, while 3.8%, 9.6% and 55.8% respectively performed 11 to 15, six to ten and one to five dental restorations.

Self-reports for restorations indicated that 30.8% students did not perform any dental restoration procedures. Zero percent of students reported that they completed more than 16 scaling and polishing's on a daily basis. Moreover, 0.0%, 7.7% and 13.5% reported that their daily rate for scaling and polishing's were 11 to 15, six to ten and one to five, respectively. Seventy eight point eight percent did not complete scaling and polishing's on a daily basis. One student (1.9%) in turn reported that they participated in Oral Hygiene education motivations more than 16 times a day, while 1.9%, 3.8%, and 23.1% respectively performed 11 to 15, six to ten and one to five Oral Hygiene education motivations daily. Sixty nine point two percent students reported that they did not perform daily Oral Hygiene education motivations.

The self-reports for fissure sealants indicated that 0.0% performed more than 16 fissure sealants per day while 0.0%, 0.0% and 13.5% respectively performed 11 to 15, six to ten and one to five fissure sealants daily. Overall 86.5% reported that they did not perform fissure sealants daily. Zero percent of students reported that they completed more than 16 desensitize applications, while 0.0%, 1.9% and 5.8% respectively performed 11 to 15, six to ten and one to five desensitize applications.

Self-reports for desensitize applications indicated that 92.3% of students did not perform any desensitize applications. The self-reports for ART and PRR indicated that 0.0% students performed more than 16 ART and PRR procedures per day while 0.0%, 0.0% and 0.0% respectively performed 11 to 15, six to ten and one to five ART and PRR procedures daily. Overall 52 students 100% reported they did not perform ART and PRR procedures daily.

Table 4: Self-reported number of procedures performed daily by BChD students on School Outreach (N=52)

	Examination	Screening	Extraction	Restoration	Scale and polish	OH Education	Fissure seal	Desensitize	ART	PRR
None	22 (42.3%)	32 (61.5%)	30 (57.7%)	16 (30.8%)	41 (78.8%)	36 (69.2%)	45 (86.5%)	48 (92.3%)	52 (100%)	52 (100%)
1 to 5	22 (42.3%)	9 (17.3%)	19 (36.5%)	29 (55.8%)	7 (13.5%)	12 (23.1%)	7 (13.5%)	3 (5.8%)	0 (0.0%)	0 (0.0%)
6 to 10	5 (9.6%)	3 (5.8%)	2 (3.8%)	5 (9.6%)	4 (7.7%)	2 (3.8%)	0 (0.0%)	1 (1.9%)	0 (0.0%)	0 (0.0%)
11 to 15	2 (3.8%)	2 (3.8%)	0 (0.0%)	2 (3.8%)	0 (0.0%)	1 (1.9%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
More than >16	1 (1.9%)	6 (11.5%)	1 (1.9%)	0 (0.0%)	0 (0.0%)	1 (1.9%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)

4.2.4 Self-reported number of procedures performed daily by OH students on School Outreach

One student 7.7% reported that they completed more than 16 dental examinations on a daily basis. Moreover, 7.7%, 15.4% and 38.5% reported that their daily rate for dental examinations were 11 to 15, six to ten and one to five, respectively. More than 30.8% did not complete a dental examination on a daily basis. Thirty point eight percent of students in turn reported that they participated in screening services more than 16 times a day, while 23.1%, 7.7%, and 38.5% respectively performed 11 to 15, six to ten and one to five screening services daily. Zero percent of students reported that they did not perform daily screening services. Zero percent students reported that that they completed more than 16 dental restorations, while 0.0%, 0.0% and 30.8% respectively performed 11 to 15, six to ten and one to five dental restorations. The self-reporting for dental restorations indicated that 69.2% students did not perform any dental restoration procedures. Zero percent of students reported that they completed more than 16 scaling and polishing's on a daily basis.

Moreover, 7.7%, 7.7% and 23.1% reported that their daily rate for scaling and polishing's were 11 to 15, six to ten and one to five, respectively. Sixty one point five percent of students did not complete scaling and polishing's on a daily basis. Twenty three point one percent of students in turn reported that they participated in Oral Hygiene education motivations more than 16 times a day, while 7.7%, 23.1%, and 23.1% respectively performed 11 to 15, six to ten and one to five Oral Hygiene education motivations daily. Self-reports indicated that 23.1% students did not perform daily Oral Hygiene education motivations. Self-reports for fissure sealants indicated that 15.4% performed more than 16 fissure sealants per day while 30.8%, 7.7% and 38.5% respectively performed 11 to 15, six to ten and one to five fissure sealants daily.

Self-reports for fissure sealants indicated that 7.7% students did not perform fissure sealants daily. Zero percent of students reported that they completed more than 16 desensitize applications, while 0.0%, 7.7% and 7.7% respectively performed 11 to 15, six to ten and one to five desensitize applications. Self-reports for desensitize applications indicated that 84.6% students did not perform any desensitize applications. Self-reports for ART indicated that 0.0% performed more than 16 ART procedures per day while 0.0%, 0.0% and 7.7% respectively performed 11 to 15, six

to ten and one to five ART procedures daily. Ninety-two point three percent students reported they did not perform ART procedures daily. Self-reports for PRR procedures indicated that 0.0% performed more than 16 PRR procedures per day while 0.0%, 0.0% and 15.4% respectively performed 11 to 15, six to ten and one to five Art procedures daily. Eight four point six students reported they did not perform PRR procedures daily.

Table 5: Number and types of activities performed by OH students on School Outreach (N=13)

	Examination	Screening	Restorations	Scale and polish	OH Education	Fissure seal	Desensitize	ART	PRR
None	4 (30.8%)	0 (0.0%)	9 (69.2%)	8 (61.5%)	3 (23.1%)	1 (7.7%)	11(84.6%)	12 (92.3%)	11 (84.6%)
1 to 5	5 (38.5%)	5 (38.5%)	4 (30.8%)	3 (23.1%)	3 (23.1%)	5 (38.5%)	1 (7.7%)	1 (7.7%)	2 (15.4%)
6 to 10	2 (15.4%)	1 (7.7%)	0 (0.0%)	1 (7.7%)	3 (23.1%)	1 (7.7%)	1 (7.7%)	0 (0.0%)	0 (0.0%)
11 to 15	1 (7.7%)	3 (23.1%)	0 (0.0%)	1 (7.7%)	1 (7.7%)	4 (30.8%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
More than >16	1 (7.7%)	4 (30.8%)	0 (0.0%)	0 (0.0%)	3 (23.1%)	2 (15.4%)	0 (0.0%)	0 (0.0%)	0 (0.0%)

4.3 Work-related limitations experienced by BChD and OH students

Seventy four percent and 41.5% of students reported inadequate materials as one of the most common work-related limitations for the Phelophepa Train and school outreach projects respectively. Additional work-related limitations reported by students indicated that defective equipment 30.8% on Phelophepa Train and 38.5% at school outreach and infection control 41.5% at school outreach and 15.4% on Phelophepa Train as important limitations. Other work-related limitations reported included time constraints 18.5% on Phelophepa Train and 35.4% at school outreach projects. Accommodation as work-related limitation indicated at 9.2% at the Phelophepa Train and 24.6% at school outreach as self-reports by students. Heavy workload 27.7% was self-reported as a work-related limitation on Phelophepa Train and 6.2% at school outreach projects respectively.

Table 6: Work-related limitations experienced by BChD and OH students (N=65)

Work-related limitations experienced by BChD and OH students				
	Train		School	
	Frequency	%	Frequency	%
Time constraints	12	18.5	23	35.4
Inadequate materials	48	73.8	27	41.5
Defective equipment	20	30.8	25	38.5
Heavy workload	18	27.7	4	6.2
Infection control	10	15.4	27	41.5
Accommodation	6	9.2	16	24.6
Transport	8	12.3	2	3.1
Lack of supervision	1	1.5	4	6.2
No work-related experienced	5	7.7	5	7.7

4.4 Outreach activities contributed to the personal work, self and personal development experienced by students

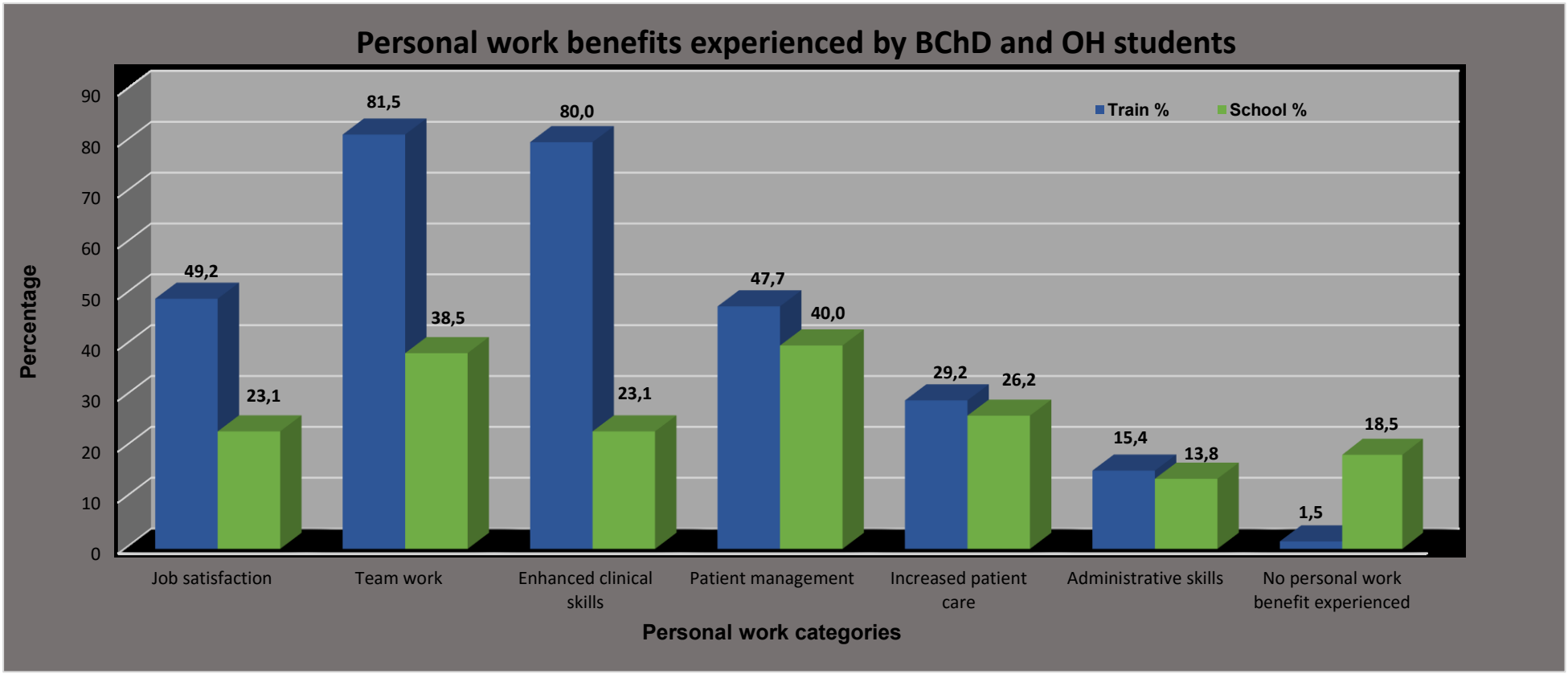
Students reported on their work, self and personal development traits experienced while on outreach activities endeavouring to develop their individual personal and social development skills simultaneously with their clinical and academic skills.

4.4.1 Personal work benefit experienced by BChD and OH students

Students reported that teamwork 81.5% on the Phelophepa Train and 38.5% at school outreach projects respectively benefited their personal work experience. Eighty

percent of students reported that enhancement of clinical skills were experienced on the Phelophepa Train and 23.1% by school outreach projects respectively. Self-reports for job satisfaction 49.2% was indicated on the Phelophepa Train and 23.1% at school outreach. Management of patients 47.7% as personal work benefit was reported on Phelophepa Train and 40% at school outreach respectively. Twenty-nine point two percent of students in turn reported they experienced increased patient care at Phelophepa Train and 26.2% at school outreach projects respectively. Self-reports by students on administrative skills 15.4% at Phelophepa Train and 13.8% at school outreach contributed to personal work benefits experienced. Eighteen point five percent of students reported that no personal work benefit was experienced at school outreach and 1.5% at Phelophepa Train respectively. Figure 2.

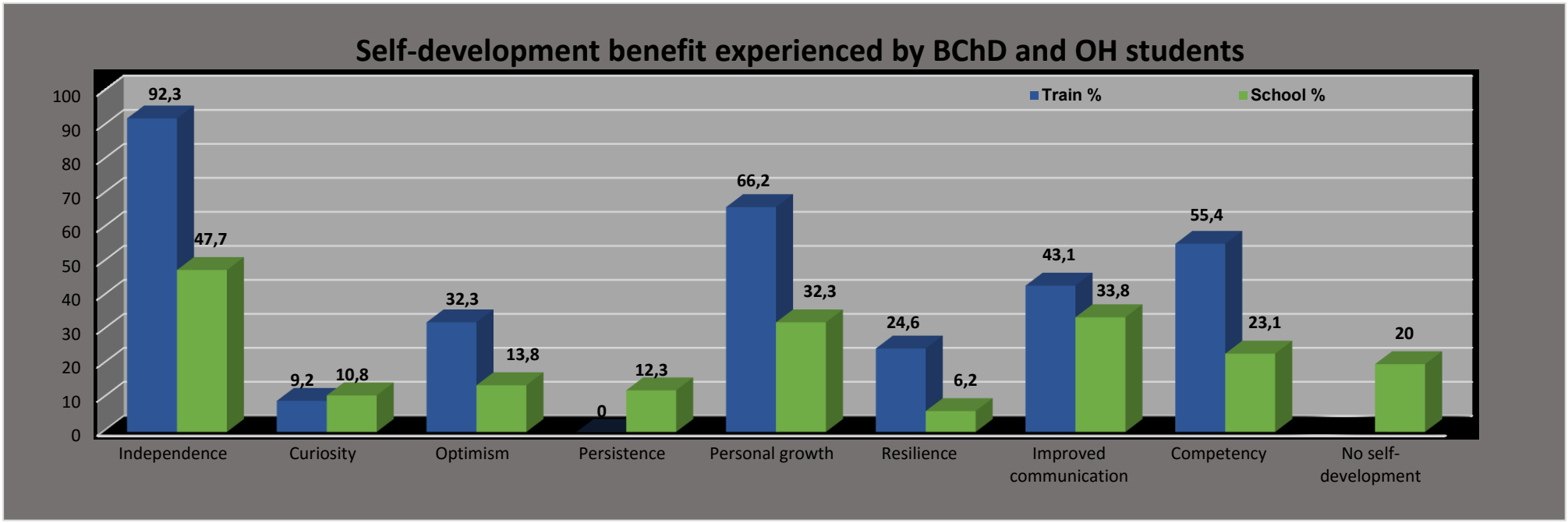
Figure 2: Personal work benefit experienced by BChD and OH students



4.4.2 Self-development benefit experienced by BChD and OH students

Students reported their self-development improved due to working independently both on the train 92.3% and at the school outreach 47.7% projects respectively. In total 66.2% of students on the Phelophepa Train reported they experienced personal growth compared to 32.3% of students at school outreach. Fifty-five point four percent of students reported that their competency skills improved on the Phelophepa Train in relation to 23.1% at school outreach. Self-reports for improved communication as self-development benefit indicated that 43.1% of students on Phelophepa Train and 33.8% on school outreach experienced the benefit. Self-reports by students indicated that optimism 32.3% on Phelophepa Train and 13.8% at school outreach projects increased their self-development benefit. Twenty-four point six percent of students reported on experiencing being resilient on Phelophepa Train and 6.2% at school outreach projects respectively. Twelve point three percent of students indicated that persistence at school outreach projects was reported and curiosity 10.8% at school outreach and 9.2% on Phelophepa Train as self-development benefits. Figure 3.

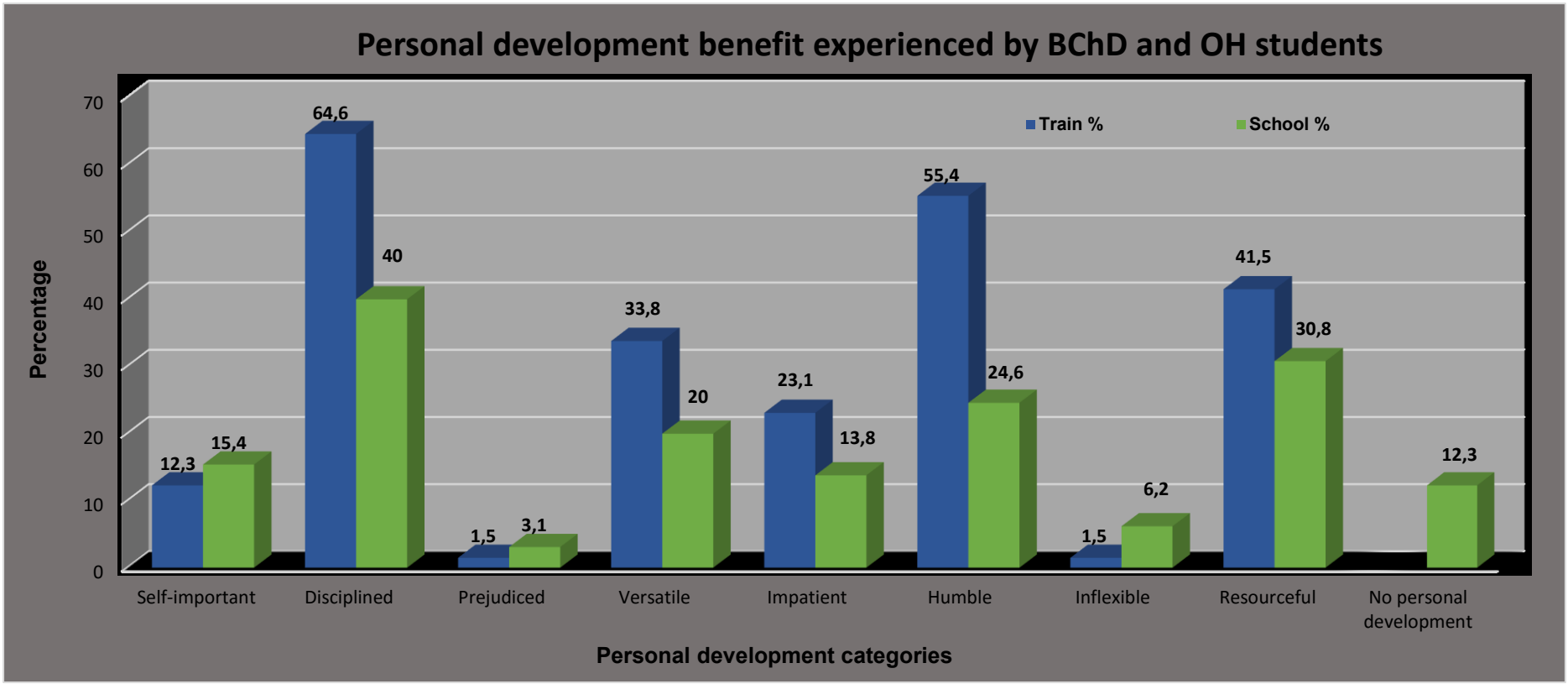
Figure 3: Self-development benefit experienced by BChD and OH students



4.4.3 Personal development benefit experienced by BChD and OH students

Students reported that a disciplined manner of working on the Phelophepa Train 64.6% and 40% on school outreach contributed to their personal development. Fifty-five point four percent of students reported that they experienced being humbled in behaviour on the Phelophepa Train and 24.6% at school outreach projects respectively. Self-reports by students on being resourceful 41.5% at Phelophepa Train and 30.8% at school outreach indicated students personal development on projects respectively. Thirty-three point eight percent of students reported that being versatile and adapting to various activities on Phelophepa Train and 20% at school outreach. Self-reports indicated 23.1% of students experienced being impatient on Phelophepa Train and 13.8% at school outreach project respectively. In total 15.4% of students reported on their own value of self-importance at school outreach and 12.3% on Phelophepa Train. Six point two percent of students reported being inflexible to situations at school outreach and 1.5%, Phelophepa Train projects respectively. Only 3.1% self-reported on experiencing a prejudiced approach at school outreach and 1.5% on the Phelophepa Train. Figure 4.

Figure 4: Personal development benefit experienced by BChD and OH students



4.5 Outreach activities contributed to the Academic development and Civic responsibility of students

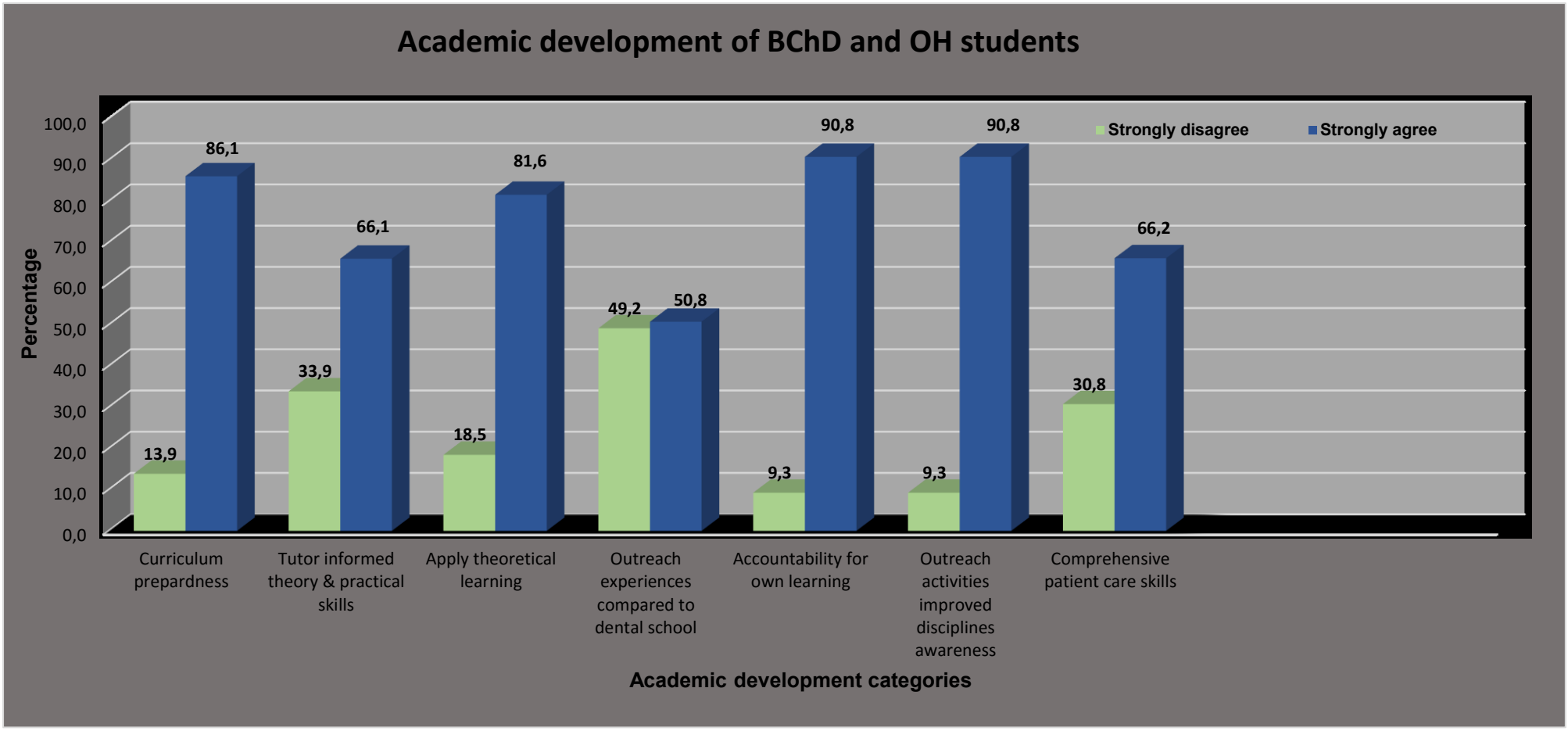
Students reported on their academic development and civic responsibility while on outreach activities. They displayed their preparedness as dental professionals in accepting civic responsibilities to provide care for underserved populations; portraying confidence in tackling clinical situations, compared to students who trained only at the dental school clinic.

4.5.1 Academic development

In total 86.1% of students reported, they strongly agreed that their academic curriculum prepared them effectively to work on patients of diverse ethnicity in relation to 13.9% who strongly disagreed. Eighty one point six percent of students strongly agreed they were able to apply their theoretical learning and practical competence skills on the outreach activities compared to 18.5% who strongly disagreed. Self-reports indicated that before starting the outreach activities, 66.1% students strongly agreed that tutors informed them about the level of theoretical learning and practical competence skills required on outreach activities whereas 33.9% strongly disagreed. Self-reports by students indicated 49.2% strongly disagreed and 50.8% strongly agreed they found outreach experiences more challenging compared to Dental school clinical routines.

After participation of outreach activities, 90.8% students strongly agreed and 9.35% strongly disagreed, they experienced being accountable for their own learning. Ninety point eight percent of students strongly agreed their experience with other disciplines on outreach activities improved their awareness of different disciplines compared to 9.3% who strongly disagreed. Self-reports indicated that 30.8% strongly disagreed they learned more comprehensive patient care skills on outreach activities than in contrast to the Dental school where specialized care is grouped to different speciality departments, however 66.2% students strongly agreed. Figure 5.

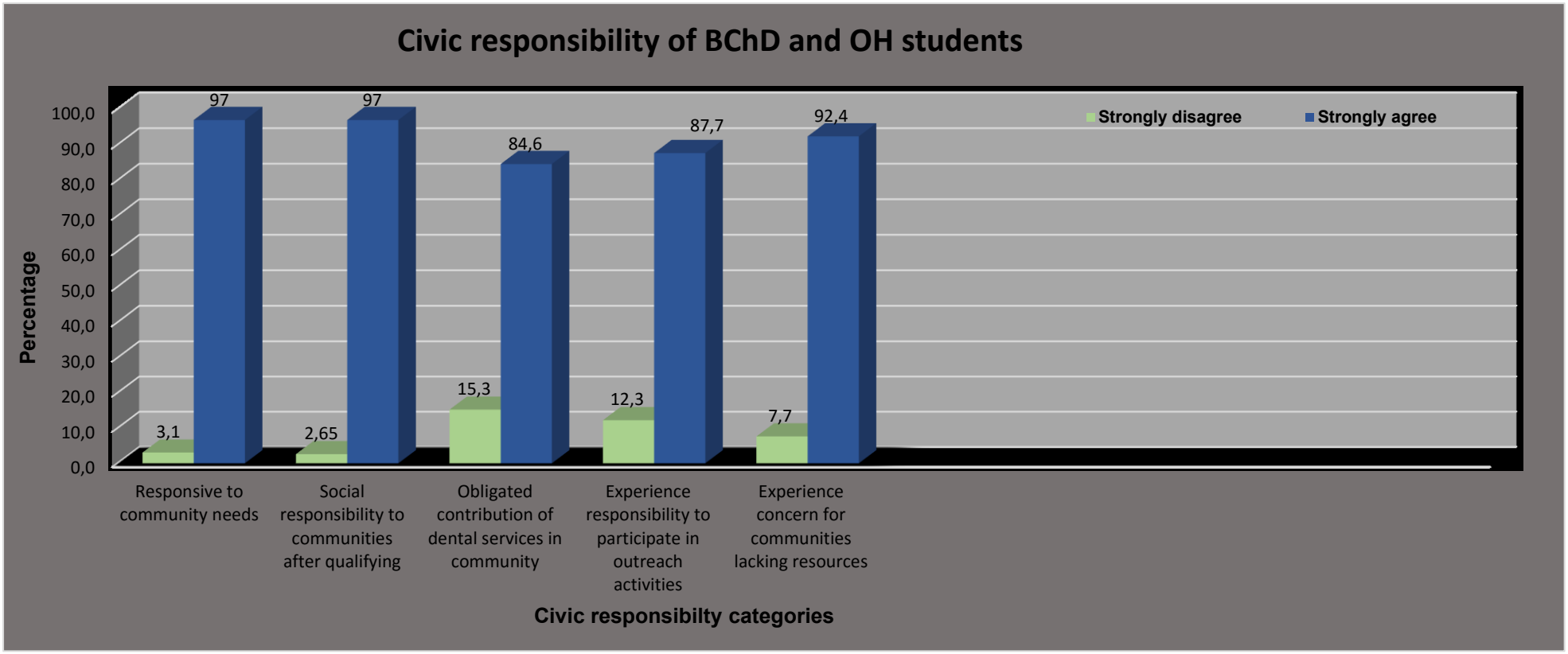
Figure 5: Academic development of BChD and OH students



4.5.2 Civic responsibility

Ninety-seven percent of students self-reported they strongly agreed that outreach activities made them more responsive to the needs of the attended communities and 3.1% of students strongly disagreed. Ninety-seven percent of students reported that after qualifying, they would be motivated to contribute to the social responsibility for the underserved communities, however 2.65% of students strongly disagreed with the statement. Self-reports from students indicated 92.4% strongly agreed they experienced concern for the community and the people suffering from a lack of resources, whereas 7.7% of students strongly disagreed. Eighty-seven point seven percent of students strongly agreed and 12.3% strongly disagreed to experience a responsibility and moral obligation to the community and the people after participation in outreach activities. Self-reports by student's indicated 84.6% strongly agreed to feeling obligated to contribute to the community by rendering dental services on outreach activities whereas 15.3% strongly disagreed. Figure 6.

Figure 6: Civic responsibility of BChD and OH students



CHAPTER 5: DISCUSSION

The aim of the study was to evaluate the impact of self-reported experiences of Outreach activities amongst undergraduate dental and oral hygiene students of the University of Pretoria. The objectives were to: identify the type and number of dental services that were rendered during outreach activities; determine if outreach activities contributed to self and social development; determine if outreach activities contributed to the academic development and to determine if outreach activities contributed to civic responsibility. The data was collected using a self-administered modified questionnaire consisting of both open and closed questions.[42,43] It was in the English language and was handed out after lectures. The questionnaire was administered to participants by the researcher at the study setting and the need for consent was explained. The researcher explained the outline of the questionnaire and answering format. Participants were allowed to ask for clarification on their misinterpretation of questions and answering format. The questionnaire was completed anonymously and was assigned a unique serial number.

5.1 Response rate and demographic characteristics

The response rate 93% of registered students that completed the questionnaire, signed the consent forms and completed their demographic data was similar to studies conducted by Suresan[13] 90%, Bhayat[14] 91%, and Johnson[7] 96.5% *et al* who reported on the impact of outreach programs on academic development, personal development and civic responsibilities of dental undergraduate students in dental secondary care settings. The participant's average age was 22 years with 70.8% being female.

5.2 Self-reported activities undertaken during outreach activities

At both the Phelophepa Train and local school-based programmes students reported on performing a number of different types of procedures, which included dental examinations, screening services, dental extractions, scaling and polishing, and various caries preventative procedures. Dental students self-reported to have completed between one and more than 16 dental examinations 85.5%; screening services 86.6%; dental extractions 96.2% and dental restorations 75% daily on the Phelophepa Train. Self-reports by students indicated they completed between one and more than 16 dental examinations 57.6%; screening services 38.4%; dental

extractions 42.2% and dental restorations 69.2% at local school-based projects. Similarly, a study by Bhayat *et al* [15] reported that dental students completed daily between 12 and eight dental examinations respectively on the Phelophepa Train and clinic; 19 and 21 dental extractions on the Phelophepa Train and clinic and between two and four dental restorations daily on the Phelophepa Train and clinic.

The high demand for extractions is possibly attributed to the high volume of patients in underserved communities visiting the Phelophepa Train seeking relief from pain and sepsis. The majority of the patients attending the Phelophepa Train are of low socioeconomic status and reside in rural areas. As a result, they don't have access to dental care and often neglect their oral health. This often results in the decay extending into the pulp which limit the options and extractions are then the only means dealing with the disease (SADHS). This is similar to the survey completed by (SADHS)[17] in 2016 where respondents reported that the main reasons for them not seeking treatment was that treatment was too expensive; all services were not available and that sites were far to access the treatment. A similar study by Bhayat *et al* [45] reported that the most common procedures performed at POHCF's in Gauteng were dental extractions, restorations and fissure sealants.

Oral hygiene students reported they completed the same amount of dental examination procedures 69.3% and screening services 100% on the Phelophepa Train and local school-based programmes. It was noticeable that more oral hygiene 38.5% students completed between one and five fissure sealants at the school-based programmes than on the Phelophepa Train 15.4% and between 11 and 15 scaling and polishing's 7.7% at school-based programmes in comparison to the Phelophepa Train 46.2%.

During the school-based programmes, students had time to complete more procedures as there were fewer patients that they treated. The students also completed more preventive procedures at the school possibly due to the fact that the patients were all young children, they had a better dental IQ and were able to visit the mobile unit repeatedly. Both groups of students reported that none to a few ART and PRR procedures were completed on the Phelophepa Train and local school-based programmes. Possible reasons why none to a few ART and PRR procedures were

performed possibly exist because patients arriving for these procedure either had more severe carious lesions that required invasive treatment options; mobile x-ray units are not available at school outreach projects to capture and record the necessary bitewing or periapical radiographs or that time and resource constraints influence the performing of these procedures.

Oral hygiene students are not trained to carry out dental extractions and as a result, they did not perform any extractions. The oral profession, like all medical professions, are bound by the regulations of the HPCSA.[26] These regulations define the scope of practice for all health care providers. And oral hygiene students are allowed to perform primarily preventive procedures. These include scaling and polishing, dental screenings, fissure sealants, application of fluorides and education on oral health. Permitting undergraduate dental and OH students to participate in outreach activities together, is an ideal mechanism of building teamwork and unifying the profession in meeting the oral health needs of patients.

Traditionally the education of dentists and dental hygienists has taken place as uniprofessional educations where students learn in isolation from each other, but growing evidence supporting the idea that interprofessional education (IPE) will improve abilities both to work as a team and to communicate more effectively with colleagues and patients must also be taken into account.[46] Similarly in a study conducted by Wong *et al* they reported students in nursing, pharmacy, biomedical science, and Chinese medicine programs to have significant improvements in attitudes towards team learning, teamwork, and recognized their own professions as well as respecting the roles and values of other professions.[47] Respectively these positive outcomes enabled students to extend their interdisciplinary mind-sets and learn how to work closely with other professions in order to provide holistic, compassionate and coordinated care to patients in the future.[47]

5.3 Work-related limitations experienced by BChD and OH students

The most common work-related limitation was inadequate materials; this was reported by 74% and 42% of students on the Phelophepa Train and schools, respectively. Other similar studies also reported that the most common work-related limitations at outreach sites were the lack of materials and equipment.[14,15] Inadequate materials should not

necessarily be perceived as not having enough materials to perform procedures. However, the possibility exists that students weren't exposed to similar materials used at their institution of higher education. Facilities and institutions are obligated to manage and improvise when materials are supplied due to inadequate budgets.[48]

Defective equipment 69.3% was another work-related limitation reported by both groups of students on the Phelophepa Train and local school-based programmes. This is noteworthy as these were also reported in similar studies[14,15] where students complained about equipment being insufficient and broken at outreach sites. The defective equipment could possibly be due to unforeseen load shedding that took place at some of the sites, which could have damaged the equipment, old dental units not being maintained regularly, budget constraints forcing staff at the facilities not to replace defective equipment and modern hand pieces and equipment's non-availability.

In the current study, 56.9% of students reported that infection control measures were insufficient at the local school-based programmes and Phelophepa Train. This compared to a similar study where 26.1% of students objected to infection control measures that were implemented at the outreach site.[14] Although instruments were pre-packed and sterilized before each outreach activity, no additional sterilization of instrumentation took place. In addition, possibly cross infection contamination was of a concern to students, as the situation was different as to what they experienced at their clinical training institution.

5.4 Outreach activities impact on the personal work, self and personal development experienced by students

Students in the current study responded that on the Phelophepa Train and school-based local programmes that team work 100% was one of the personal benefits mostly experienced. These reports are similar to a study reported on by Shinde *et al* where 100% of participants reported that they benefitted through participating in community outreach programs.[49] It developed their skills such as confidence, patient management, clinical skills, teamwork, diagnosis, convincing power, and communication skill. Most likely students learned more on the Phelophepa Train working as a team with different disciplines from the practical and clinical exposure

they received due to the high demand for pain relief and sepsis treatment offered to dental patients of diverse groups than would be offered at their training institution.

Students responded enhanced clinical skills 80% as a personal work benefit experienced on the Phelophepa Train. Studies by Burrows 68.7% and Bhayat 92% found that outreach projects helped students improve their practical clinical skills providing holistic, quality health care to patients.[15,50] Clinical skill enhancement especially on the Phelophepa Train might possibly indicate participant's ability to integrate their theoretical knowledge into practical applications in an environment different to the known institution of higher education. Performing more procedures daily on patients from the Phelophepa Train with altered degrees of procedure difficulty, enabled students to work independently and promptly due to the high demand of patients accessing care.

Students 92.3% on the Phelophepa Train and 47.7% at local school-based programmes reported their independence as an important characteristic in self-development. These reports are similar by Lynch *et al* [21] study that reported on dental students and dental hygienists participating in The Cardiff programme at the St David's Hospital in 2002. They reported that 77% of students felt that their confidence had greatly improved due to the increased independence and being allowed to make own decisions clinically. It is significant to note while students are on outreach activities, their independence is enriched by being allowed to formulate a clinical diagnosis independently, work in a multi-disciplinary team of professionals and working at rural sites and within communities. Incorporating being exposed to different teaching and assessment techniques of supervisors and supervisors willing to teach and assist students with different techniques and treatment applications.

In the present study, 98.5% of students on the Phelophepa Train and local school-based programmes reported on their personal growth as a benefit of self-development. Bhayat *et al* reported 96% of students working in the community were able to define their personal strengths and weaknesses.[15] It is possible that participation in outreach activities can develop a student's identity, and self and social development which could contribute to their individual potential and personal growth. Personal development and growth may then be considered as a lifelong process, acquiring skills and qualities and

to set goals to maximize potential.

Students reported 78.5% being competent as a self-development trait in the study. In a different study students rated themselves as being most confident 83-97%[29] in preventive treatments, such as fissure sealants, oral hygiene instruction, dietary advice and fluoride prescription, perceiving themselves as being well prepared and competent to provide routine care for children in general dental practice on qualification. Placement and participation in outreach activities is a significant step towards becoming competent to practice with being accepted as a working member of a dental team. Students reporting on their competence is indicative of clinical skills continuously executed in an educational environment of clinical exposure either in a familiar clinical setting or rural platform. Especially when performing basic preventive procedures confidently and competently.

Students reported the way in which they worked to achieve their goal in a disciplined manner 100% as a personal development trait. This is similar to a study 96% where participants reported that during their participation in the community it helped to define their personal strengths and weaknesses.[15] The high level of discipline reported demonstrates the motivation and participant's awareness of the needs experienced by communities they served. Participants took up the responsibility and accountability to render services, although they might not be fully aware of the valuable role they play in a multi-disciplinary team.

Sixty-one percent of students reported being humbled by their participation in outreach activities at both the Phelophepa Train and school outreach programmes. Related studies reported that between 73% to 99% reported exposing students to marginalized communities resulted in them developing a positive trait of humbleness and having a responsibility to serve.[13,14] Participants being humbled to serve the disadvantaged populations indicates their ability to recognise the quality of care that is needed in the community and being able to set their prejudices against people from different backgrounds, disparities social economic status aside and to serve with humbleness. Participants possibly felt that although they are not fully qualified yet, and still receiving training, that they were making a difference in the community and perceived it a humble quality.

5.5 Outreach activities impact on the Academic development and Civic responsibility of students

5.5.1 Academic development

In the current study, 91% strongly agreed that after participating in outreach activities, they had been more accountable for their own learning and that involvement with other disciplines improved their awareness of outreach activities. Equally, studies by Suresan *et al*[13] reported that 51% of the participants agreed that outreach program made them more aware of the roles of health professionals in other disciplines besides their own and Bhayat *et al*[14] reported that 74% of students participating in the outreach activity made them take responsibility for their own learning. This could be credited to the fact they were exposed to various patient groups, ages, different cultures and socioeconomic background. Respectively and consistent with the results, it may be determined that they accepted the responsibility to make decisions on their own with supervisors allowing them to establish their role in a multidisciplinary team to provide equitable healthcare to every patient with the same level of quality despite differences in gender, ethnicity, geographic location or socioeconomic status.

Most of the students 86% strongly agreed that their academic curriculum prepared them effectively to treat patients of diverse ethnicity. Bhayat *et al*[14] reported that 93% of students considered that outreach activities had helped them to apply theory in practice and Suresan *et al*[13] reported that 56% of the participants agreed that participation in outreach programs helped them to understand the material from their lectures and readings. As a result it can therefore be suggested that when participants understanding and applying theoretical concepts better improves the quality of services offered and working independently delivering relevant and meaningful care relates the academic content to the real world situations.

5.5.2 Civic responsibility

Ninety-seven percent of students reported, that during and after participation of outreach activities they were more responsive to the needs of the attended communities and they believed their motivation to treat underserved communities would contribute immensely to their social responsibility after qualifying as dental professionals. These reports are similar to a study done by Fitch[51] where 96% of the

participants became more aware of the needs of communities. Similarly studies conducted by Bhayat *et al* where 94%[13] and 86%[31] of the participants agreed that the outreach experience had made them aware of their roles in the community with 85%[14] and 86%[15] of the participants agreeing that they have a responsibility to serve the community.

Students experienced an 87.7% responsibility and moral obligation to the community and the people after participation. Similarly results were reported by Suresan *et al*[13] that 99% of participants agreed they have a responsibility to serve the community and Bhayat et al[14] that all participants agreed that they had become more aware of the community's needs and that it was their responsibility to serve their community. Therefore the supposition that reconnecting with communities, critical thinking in applying their skill and building relationships with people who have authentic challenges is a manner in which outreach activities assists students accepting responsibility and realizing the need that exits in the underserved communities.

5.6 Conclusion

Student were able to perform dental examinations, screening services, dental extractions, oral health education, scaling and polishing's and more while on outreach activities. The autonomy to work alone and the exposure to the community encouraged students to develop and improve their independence, accountability, humanitarianism and compassion towards communities and patients. Outreach activities demonstrated to have an impact on the personal work, self and academic development and civic responsibility of reporting participants. Although students reported that inadequate materials, defective equipment and infection control measures were experienced as work-related limitations, it did not decrease their passion and dedication to participate in activities and deliver treatment to underserved communities. Participants were confident in applying their theoretical learning and practical competence skills on the outreach activities; however, they had not encountered outreach experiences more challenging than Dental school clinical routines. Student's self-assurance in accepting their responsibility and moral obligation through connecting with their communities, applying their skills and building relationships with people in authentic situations strengthened the importance of outreach activities.

5.7 Recommendations

Allocation of time for rendering services at local school-based programmes could however be reconsidered to be extended to full day activities to allow for more treating hours.

Defective equipment need to be assessed and replaced within budgetary limits. Infection control measures may possibly be altered to correspond with the same measures implemented at the institution of higher education so that students may follow all protocols and procedures within infection control measures.

The integration of curricula and outreach activities is challenging, and institutions of higher education should endeavor to maintain a team-based approach for successful continuance of outreach activities and oral health programmes.

5.8 Limitations

A limitation of the study is the small sample size although 93% response rate was received, this is only representative of data collected from one dental school in SA. Students may have been unreceptive to reporting, expressing and associating their experiences on outreach activities therefore appearing less motivated to participate in the study. Additionally a number of students did not have an opportunity to participate in all the outreach activities offered. The study design is a limitation as a cross-sectional study is a once-off study and inferences are not always factual. Students were expected to recall their experiences and recall bias could be an issue. Students could have answered according to a response acquiescence which resulted in them being involuntary honest about their true feelings; which is a particular issue with self-reporting participant surveys.[52]

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APPENDIX A: Questionnaire

ANNEXURE A

Self-reported experience of Outreach activities amongst undergraduate Oral Health students at a University in South Africa.

Section A: Demographics

1. What is your age? _____ Years

2. What is your gender? 1 ☐ Male 2 ☐ Female

3. What is your race? 1 ☐ Asian 2 ☐ Black 3 ☐ Coloured 4 ☐ Indian 5 ☐ Multi-racial 6 ☐ White 7 ☐ Other

4. In which undergraduate programme are you currently enrolled?

1 ☐ BChD V 2 ☐ BOH III

2

Section B: Tell us about the Phelophepa

5. Did you get the opportunity to attend the Phelophepa? If No, do not answer questions 6-18 and start answering question 19.

1 ☐ Yes 2 ☐ No

6. Name the station at which you were based to complete your outreach activity

_____

7. Who handled the logistics regarding the transport arrangements for the Phelophepa outreach activity?

1 ☐ I made my own arrangements for transport 2 ☐ Train personnel made the arrangements for transport 3 ☐ University personnel handled arrangements for transport

8. Who handled the logistics regarding the placement for the Phelophepa outreach activity?

1 ☐ I made my own placement arrangements 2 ☐ Train personnel made the placement arrangements 3 ☐ University personnel handled placement arrangements

9. Which procedures did you perform daily on the train? **You may tick more than one if applicable**

1 ☐ Examinations 2 ☐ Screening 3 ☐ Extractions 4 ☐ Restorations
5 ☐ Scaling and polishing 6 ☐ Oral hygiene education 7 ☐ Fissure sealants
8 ☐ Desensitizing 9 ☐ Other _____ (specify)

10. On average how many of these procedures did you perform daily? **You may tick more than one if applicable.**

Examinations 1-5 ☐ 6-10 ☐ 11-15 ☐ more than ☐ _____ (specify)
Screening 1-5 ☐ 6-10 ☐ 11-15 ☐ more than ☐ _____ (specify)
Extractions 1-5 ☐ 6-10 ☐ 11-15 ☐ more than ☐ _____ (specify)
Restorations 1-5 ☐ 6-10 ☐ 11-15 ☐ more than ☐ _____ (specify)
Scale & polish 1-5 ☐ 6-10 ☐ 11-15 ☐ more than ☐ _____ (specify)
Oral Hygiene education 1-5 ☐ 6-10 ☐ 11-15 ☐ more than ☐ _____ (specify)
Fissure sealants 1-5 ☐ 6-10 ☐ 11-15 ☐ more than ☐ _____ (specify)
Desensitizing 1-5 ☐ 6-10 ☐ 11-15 ☐ more than ☐ _____ (specify)
Other_____ (specify)

11. Based on your experience, what work-related limitations did you encounter during the Phelophepa outreach activities? **You may tick more than one if applicable.**

1 ☐ Time constraints 2 ☐ Inadequate materials 3 ☐ Defective equipment
4 ☐ Heavy workload 5 ☐ Infection control 6 ☐ Accommodation
7 ☐ Transport 8 ☐ Lack of supervision 9 ☐ No work-related limitation experienced 10 ☐ Other

12. Based on the abovementioned question, **choose one most relevant** work-related limitation you encountered during the Phelophepa outreach activity

1 ☐ Time constraints 2 ☐ Inadequate materials 3 ☐ Defective equipment

4 ☐ Heavy workload 5 ☐ Infection control 6 ☐ Accommodation
7 ☐ Transport 8 ☐ Lack of supervision 9 ☐ No work-related limitation experienced 10 ☐ Other

13. Based on your experience, what personal work benefits did you encounter during the Phelophepa outreach activities? **You may tick more than one if applicable.**

1 ☐ Job satisfaction 2 ☐ Team work 3 ☐ Enhanced clinical skills 4 ☐ Patient management 5 ☐ Increased patient care 6 ☐ Administrative skills 7 ☐ No personal work benefit experienced 8 ☐ Other

14. Based on the abovementioned question, **choose one most relevant** personal work benefit you encountered during the Phelophepa outreach activity.

1 ☐ Job satisfaction 2 ☐ Team work 3 ☐ Enhanced clinical skills
4 ☐ Patient management 5 ☐ Increased patient care 6 ☐ Administrative skills
7 ☐ No personal work benefit experienced 8 ☐ Other

15. What traits of self-development did you experience during the Phelophepa outreach activities? **You may tick more than one if applicable.**

1 ☐ Independence 2 ☐ Curiosity 3 ☐ Optimism 4 ☐ Persistence
5 ☐ Personal growth 6 ☐ Resilience 7 ☐ Improved communication 8 ☐ Competency
9 ☐ No self-development experienced

16. Based on the abovementioned question, **choose one most relevant** self-development trait you experienced during the Phelophepa outreach activity.

1 ☐ Independence 2 ☐ Curiosity 3 ☐ Optimism 4 ☐ Persistence
5 ☐ Personal growth 6 ☐ Resilience 7 ☐ Improved communication 8 ☐ Competency
9 ☐ No self-development experienced

17. Reflecting on your personal development during and after the Phelophepa outreach activities, what traits did you experience? **You may tick more than one if applicable.**

1 ☐ Self-important 2 ☐ Disciplined 3 ☐ Prejudiced 4 ☐ Versatile 5 ☐ Impatient
6 ☐ Humble 7 ☐ Inflexible 8 ☐ Resourceful 9 ☐ No personal development experienced

18. Based on the abovementioned question, **choose one most relevant** trait you experienced on your personal development during or after the Phelophepa outreach activity.

1 ☐ Self-important 2 ☐ Disciplined 3 ☐ Prejudiced 4 ☐ Versatile 5 ☐ Impatient
6 ☐ Humble 7 ☐ Inflexible 8 ☐ Resourceful 9 ☐ No personal development experienced

Section C: Tell us about the School Outreach activities

19. Did you get the opportunity to attend the School outreach activities? If No, do not answer questions 20-30 and start answering question 31.

1 ☐ Yes 2 ☐ No

20. Name the school at which the School outreach activity took place.

_____

21. Which procedures did you perform at the School outreach activities? **You may tick more than one if applicable.**

1 ☐ Examinations 2 ☐ Screening 3 ☐ Extractions 4 ☐ Restorations
5 ☐ Scaling and polishing 6 ☐ Oral hygiene education 7 ☐ Fissure sealants
8 ☐ Desensitizing 9 ☐ Other_____ (specify)

22. On average how many of these procedures did you perform at the School outreach activities? **You may tick more than one if applicable.**

Examinations 1-5 ☐ 6-10 ☐ 11-15 ☐ more than ☐ _____ (specify)
Screening 1-5 ☐ 6-10 ☐ 11-15 ☐ more than ☐ _____ (specify)
Extractions 1-5 ☐ 6-10 ☐ 11-15 ☐ more than ☐ _____ (specify)
Restorations 1-5 ☐ 6-10 ☐ 11-15 ☐ more than ☐ _____ (specify)

Scale & polish 1-5 ☐ 6-10 ☐ 11-15 ☐ more than ☐ _____ (specify)

Oral Hygiene education 1-5 ☐ 6-10 ☐ 11-15 ☐ more than ☐ _____ (specify)

Fissure sealants 1-5 ☐ 6-10 ☐ 11-15 ☐ more than ☐ _____ (specify)

Desensitizing 1-5 ☐ 6-10 ☐ 11-15 ☐ more than ☐ _____ (specify)

Other _____ (specify)

23. Based on your experience, what limitations did you encounter during the School outreach activities? **You may tick more than one if applicable.**

1 ☐ Time constraints 2 ☐ Inadequate materials 3 ☐ Defective equipment

4 ☐ Heavy workload 5 ☐ Infection control 6 ☐ Inadequate facilities

7 ☐ Transport 8 Lack of supervision 9 ☐ No limitation was experienced

10 ☐ Other

24. Based on the abovementioned question, **choose one most relevant** work-related limitation you encountered during the School outreach activity

1 ☐ Time constraints 2 ☐ Inadequate materials 3 ☐ Defective equipment

4 ☐ Heavy workload 5 ☐ Infection control 6 ☐ Accommodation

7 ☐ Transport 8 ☐ Lack of supervision 9 ☐ No limitation was experienced

10 ☐ Other

25. Based on your experience, what personal work benefits did you encounter during the School outreach activities? **You may tick more than one if applicable.**

1 ☐ Job satisfaction 2 ☐ Team work 3 ☐ Enhanced clinical skills

4 ☐ Patient management 5 ☐ Increased patient care

6 ☐ Administrative skills 7 ☐ No personal work benefit experienced

8 ☐ Other

26. Based on the abovementioned question, **choose one most relevant** personal work benefit you encountered during the School outreach activity.

1 ☐ Job satisfaction 2 ☐ Team work 3 ☐ Enhanced clinical skills

4 ☐ Patient management 5 ☐ Increased patient care 6 ☐ Administrative skills 7 ☐ No personal work benefit experienced 8 ☐ Other

27. What traits of self-development did you experience during the School outreach activities? **You may tick more than one if applicable.**

1 ☐ Independence 2 ☐ Curiosity 3 ☐ Optimism 4 ☐ Persistence
5 ☐ Personal growth 6 ☐ Resilience 7 ☐ Improved communication
8 ☐ Competency 9 ☐ No self-development experienced

28. Based on the abovementioned question, **choose one most relevant** self-development trait you experienced during the School outreach activity.

1 ☐ Independence 2 ☐ Curiosity 3 ☐ Optimism 4 ☐ Persistence
5 ☐ Personal growth 6 ☐ Resilience 7 ☐ Improved communication
8 ☐ Competency 9 ☐ No self-development experienced

29. Reflecting on your personal development during and after School outreach activities, what traits did you experience? **You may tick more than one if applicable.**

1 ☐ Self-important 2 ☐ Disciplined 3 ☐ Prejudiced 4 ☐ Versatile
5 ☐ Impatient 6 ☐ Humble 7 ☐ Inflexible 8 ☐ Resourceful
9 ☐ No personal development experienced

30. Based on the abovementioned question, **choose one most relevant** trait you experienced on your personal development during or after the School outreach activity.

1 ☐ Self-important 2 ☐ Disciplined 3 ☐ Prejudiced 4 ☐ Versatile 5 ☐ Impatient
6 ☐ Humble 7 ☐ Inflexible 8 ☐ Resourceful 9 ☐ No personal development experienced

Section D: Academic Development

Please put an **X** at the number that you feel is most accurate.

1. Strongly disagree **2. Disagree** **3. Agree** **4. Strongly agree**

31. Your academic curriculum prepared you effectively to work on patients of diverse ethnicity and background.

1 ☐ 2 ☐ 3 ☐ 4 ☐

32. Before starting the outreach activities, your tutors informed you about the level of theoretical learning and practical competence skills on the outreach activities.

1 ☐ 2 ☐ 3 ☐ 4 ☐

33. You were able to apply your theoretical learning and practical competence skills on the outreach activities.

1 ☐ 2 ☐ 3 ☐ 4 ☐

34. You found outreach experiences compared to Dental school clinical routines more challenging?

1 ☐ 2 ☐ 3 ☐ 4 ☐

35. After participation of outreach activities, do you experience taking accountability for your own learning?

1 ☐ 2 ☐ 3 ☐ 4 ☐

36. Did your experience with other disciplines on outreach activities improve your awareness?

1 ☐ 2 ☐ 3 ☐ 4 ☐

37. Did you learn more comprehensive patient care skills on outreach activities than in contrast to the Dental school where specialized care is grouped to different speciality departments?

1 ☐ 2 ☐ 3 ☐ 4 ☐

Section E: Civic Responsibility

38. Did the outreach activities that you participated in, make you more responsive to the needs of the attended communities?

1 ☐ 2 ☐ 3 ☐ 4 ☐

39. After qualifying, would you be motivated to contribute to the social responsibility for the underserved communities.

1 ☐ 2 ☐ 3 ☐ 4 ☐

40. Do you feel obligated to contribute to the community by rendering dental services on outreach activities?

1 ☐ 2 ☐ 3 ☐ 4 ☐

41. Do you experience a responsibility and moral obligation to the community and the people after participation in outreach activities?

1 ☐ 2 ☐ 3 ☐ 4 ☐

42. After participation in the outreach activities, do you experience concern for the community and the people who are suffering from a lack of resources?

1 ☐ 2 ☐ 3 ☐ 4 ☐

APPENDIX B: Participant consent form

ANNEXURE B

PATIENT OR PARTICIPANT'S INFORMATION & INFORMED CONSENT DOCUMENT

Researcher's name: Ms C Kruger

Personnel Number: 97078868

Department: Community Dentistry, University of Pretoria

Dear Participant

I am an Oral Hygienist and a lecturer in the Department of Community Dentistry, University of Pretoria. You are invited to volunteer to participate in our research project on: **Self-reported experience of Outreach activities amongst undergraduate Oral Health students at a University in South Africa.**

This letter gives information to help you to decide if you want to take part in this study. Before you agree you should fully understand what is involved. If you do not understand the information or have any other questions, do not hesitate to ask me. You should not agree to take part unless you are completely happy about what it is expected of you.

Once the data is collected and analyzed the study might be able to identify gaps in knowledge and therefore advice and improve curricular changes should it be necessary.

We would like you to complete a questionnaire. This may take about 10 minutes. We will collect the questionnaire from you before you leave the class. It will be kept in a safe place to ensure confidentiality. Please do not write your name on the questionnaire. This will ensure confidentiality. We will be available to help you with the questionnaire or to fill it in on your behalf should it be necessary.

Your participation in this study is voluntary. You can refuse to participate or stop at any time without giving any reason. As you do not write your name on the questionnaire, you give us the information anonymously. Once you have given the questionnaire back to us, you cannot

recall your consent. We will not be able to trace your information. Therefore, you will also not be identified as a participant in any publication that comes from this study.

Note: The implication of completing the questionnaire is that informed consent has been obtained from you. Thus any information derived from your form (which will be totally anonymous) may be used for e.g. publication, by the researchers.
We sincerely appreciate your help.

Yours truly
Mrs C Kruger
Department Community Dentistry
Room 6-64
(012) 3192918/0824109918

APPENDIX C: Permission form of CEO

Annexure C

UNIVERSITEIT VAN PRETORIA
UNIVERSITY OF PRETORIA
YUNIBESITHI YA PRETORIA

Faculty of Health Sciences
Department of Community Dentistry

The Acting Chief Executive Officer
University of Pretoria
School of Dentistry

26 August 2019

Dear Professor JG White

RE: PERMISSION TO CONDUCT A RESEARCH PROJECT

I, Candida Kruger, a lecturer at the Department of Community Dentistry, University of Pretoria kindly requests your permission to conduct a research project at the Pretoria Oral and Dental Hospital titled: **Self-reported experience of Outreach activities amongst undergraduate Oral Health students at a University in South Africa**. This study is concerned with the extent to which undergraduate students self-reported experiences of Outreach activities is accepted in teaching in South African Tertiary Institutions, but more specifically in Oral Hygiene and Dentistry. Once the data is collected and analysed, the study might be able to identify gaps in knowledge and therefore advice and improve curricular changes should it be necessary.

My contact details are as follows: email: candida.kruger@up.ac.za or 012 319 2918
You may also contact my supervisor Dr NR Nkambule on 012 319 2447, or email: zodwa.nkambule@up.ac.za.

Thanking you for your consideration in this research study.

CANDIDA KRUGER
Ms C Kruger Researcher

Signature

NTOMBIZODWA ROSEMARY NKAMBULE
Dr NR Nkambule Supervisor

Signature

Permission approved/~~not approved~~

Prof JG White
Acting CEO/Chair School of Dentistry

OFFICE OF THE CHAIR OF SCHOOL/
CHIEF EXECUTIVE OFFICER
26 AUG 2019
School of Dentistry, University of Pretoria
ORAL HEALTH CENTRE
PO Box 1266 Pretoria 0001

Official Stamp

Room 6-64 Level 6, Building
University of Pretoria, Oral & Dental
Hospital, 31 Bophelo drive, South Africa
Tel +27 (0)12 319 2918
Email candida.kruger@up.ac.za
www.up.ac.za

Fakulteit Gesondheidswetenskappe
Departement Gemeenskapstandheelkunde
Lefapha la Disaense tša Maphelo
Kgoro ya Kalafo ya Meno ya Setšhaba

APPENDIX D: Ethics Approval Certificate

UNIVERSITEIT VAN PRETORIA
UNIVERSITY OF PRETORIA
YUNIBESITHI YA PRETORIA

Faculty of Health Sciences

Institution: The Research Ethics Committee, Faculty Health Sciences, University of Pretoria complies with ICH-GCP guidelines and has US Federal wide Assurance.
- FWA 00002567, Approved dd 22 May 2002 and Expires 03/20/2022.
- IORG #: IORG0001762 OMB No. 0990-0279 Approved for use through February 28, 2022 and Expires: 03/04/2023.

13 October 2020

Approval Certificate
Annual Renewal

Ethics Reference No.: 643/2019
Title: Self-reported experience of Outreach activities amongst undergraduate Oral Health students at a University in South Africa

Dear Ms CCP Kruger

The **Annual Renewal** as supported by documents received between 2020-09-23 and 2020-10-07 for your research, was approved by the Faculty of Health Sciences Research Ethics Committee on 2020-10-07 as resolved by its quorate meeting.

Please note the following about your ethics approval:
- Renewal of ethics approval is valid for 1 year, subsequent annual renewal will become due on 2021-10-13.
- Please remember to use your protocol number (643/2019) on any documents or correspondence with the Research Ethics Committee regarding your research.
- Please note that the Research Ethics Committee may ask further questions, seek additional information, require further modification, monitor the conduct of your research, or suspend or withdraw ethics approval.

Ethics approval is subject to the following:
- The ethics approval is conditional on the research being conducted as stipulated by the details of all documents submitted to the Committee. In the event that a further need arises to change who the investigators are, the methods or any other aspect, such changes must be submitted as an Amendment for approval by the Committee.

We wish you the best with your research.

Yours sincerely

Dr R Sommers
MBChB MMed (Int) MPharmMed PhD
Deputy Chairperson of the Faculty of Health Sciences Research Ethics Committee, University of Pretoria

The Faculty of Health Sciences Research Ethics Committee complies with the SA National Act 61 of 2003 as it pertains to health research and the United States Code of Federal Regulations Title 45 and 46. This committee abides by the ethical norms and principles for research, established by the Declaration of Helsinki, the South African Medical Research Council Guidelines as well as the Guidelines for Ethical Research: Principles Structures and Processes, Second Edition 2015 (Department of Health)

Research Ethics Committee
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Fakulteit Gesondheidswetenskappe
Lefapha la Disaense tša Maphelo