

Oral Health Status of Adults with Disability Related to Body Structures and Activities in Rendovah District, Solomon Islands

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Abstract

This article provides an overview of the population and healthcare system in the Solomon Islands, with a focus on the Rendovah District in the Western Province. The majority of the population lives in rural areas, with limited access to healthcare services. Malaria and non-communicable diseases are the leading causes of mortality and morbidity. The article also highlights the high proportion of disability in the country, with common types including senile debility, lameness, deafness, and blindness. The smallest provinces have the lowest proportion of disability, while Isabel, Makira-Ulaw casa, and Central provinces have the highest.

Keywords: Oral Health; Malaria and non-communicable diseases; disability.

Introduction

Background Information

Stretched from the eastern end of Papua New Guinea to the northern most islands of Vanuatu [1], Solomon Islands comprised of over 900 coral atolls [2]. There are nine provinces that make up Solomon Islands, a Nation.

The country's population in the year 2009 census was estimated at 515, 870 growing at a rate of 2.3% per annum. The age group ranges from 15-59 years, with only 5% aged 60 years and older². The majority (80.3%) of the country's population lives in the rural areas than in the urban centres (19.7%) [1], there is a 20% rate of urbanization [3].

Rendovah District is an island district in the Western part of the Solomon Islands. It is one of the nine main islands that made up the Western province of the Solomon Islands. Western Province is the third most populated province in Solomon Islands [1] and is situated at the eastern end of Papua New Guinea.

The nearest hospital that provides dental services to the district is thirty minutes boat ride powered by outboard motor engine. And the cost of travel will be about SBD\$80 return. Subsistence farming and fishing are the main source of income for most of the people in the district. However, some people are very artistic in carving and have been their source of income. The carvings are sold to tourists and locals.

The health care services delivery to the rural populace was stagnated due to the influx of people into the urban center² in recent years. Although it is declined, malaria is still the leading causes of mortality and morbidity in children, while non-communicable diseases lead in adults [2].

Limited resources are a major drawback in the country's health care system delivery, despite the country's transitional epidemiological phase, where the country has to deal with both controlling infectious and an increasing incidence of non-communicable diseases [2].

Disability in Solomon Islands

The year 2009 census shows that 14% of the total population has some form of disability. Approximately half of the total population aged 55-59 years has disabilities. Moreover, the proportion of disability increased rapidly at the age of 35-39 years [1]. The census report highlighted that one person can have more than one disability (multiple disabilities) [1].

According to the 2009 Census, common types of disabilities in adults in Solomon Island were recorded as Senile debility (3,293 cases), lameness (2,975 cases), deafness (1,398 cases) and blindness (907 cases). Isabel, Makira-Ulaw casa and Central provinces has the highest proportion of disability, while the smallest Renbell, Honiara and Malaita Provinces have the lowest proportion [1].

Health Care Delivery in Solomon Island

Almost all of the health care services in Solomon Island are provided by the government through the Ministry of Health and Medical Services (MHMS). The MHMS is a funder, regulator and provider of health care services [2] and is based on public health care approach [4] and is available to all Solomon Islanders. All the nine Provinces, except the Polynesian dominant province of Renbell have Provincial hospitals. Guadalcanal province, which hosted the country's capital city of Honiara, is serviced by the National Referral Hospital [2]. Moreover, there are other health facilities provided by the government available in the entire province and, these include Nurse Aid Posts, Rural Health Clinics, Area Health Centres and the National Referral Hospitals. The presence of these health care facilities is based on the distribution of population of each province [2].

The Nurse Aid Posts (187) provide very basic primary health care, public health and prevention services; they are commonly situated in the remote parts of the country. Rural health Clinics offer the next level of health care, supervise the Nurse Aid posts within the same area and arrange outreach activities. There are 38 Area Health Centres that provide inpatient, outpatient, outreach care and public health services. It also offers specific birthing facilities, administrative space and staff housing. Basic dental treatment is provided in the Area Health Centres, these include tooth extractions, fillings and provision of dentures. The provincial hospitals (7) are always the highest health care provider to those residing in the remote areas. The only National Referral Hospital offers a full range of secondary clinical care, operating theatre and emergency department. Clinical cases that cannot be dealt within the facilities in the Referral hospital are referred mainly to St Vincent's Hospital in Sydney, Australia. The treatments are free of charge and the airfares are paid by the Solomon Island government based on the 1993 arrangement between the hospital and the Solomon Island government. Few paediatrics cases are sent to Randwick Children's Hospital and to Greenlane Hospital in New Zealand [2]. Apart from the seven (7) public hospitals provided by the government, there are three privately owned by non-government organizations and Church groups.

Oral Health issues in Solomon Island

Dental care treatment provided ranges from simple tooth extractions and fillings in the Area Health Centres to minor oral surgical procedures and complicated restorative procedures such as root canal treatment, crown and bridge etc in the National Referral Hospital Dental department. Factors influencing oral health of the general population include access to health care facilities, cost of care, lack of oral health promoters (staff) [2] and betel nut chewing habits. There are very limited Oral health professional and specialists in Solomon Island. In 2005 a total of 52 dentists were recorded and the ratio per 1,000 populations was 0.10 [2]. Dental caries and periodontal diseases are the two most common dental health problems of adults in Solomon Island. Most patients present to any dental clinic in the country due to pain. In general adults suffering from periodontal diseases do not visit a dental facility due to lack of knowledge of the disease. Tooth loss, dental caries, periodontal diseases, xerostomia and precancer/cancer are some of the common oral health problems in adult [8]. According to a study [6] in 2000, there is a mark increased prevalence of Oral cancer in adults in Solomon Island.

Statement of the Problem

Adults with disabilities may have poor oral health status due to lack of physical accessibility, transportation, and cost of treatment, fear/anxiety and lack of knowledge in oral hygiene in Pacific Island Nation.

The same may prevail in the Solomon Islands due to its geographical location in the Pacific region, weak economic status and lack of Oral health knowledge among the general populace. The findings of this study will be helpful in planning health care delivery in Solomon Islands in future especially to the special need patients.

Literature Review

The International Classification of Functioning, Disability and Health (ICF) defined disability as impairment, activity limitations and participation restrictions [7]. ICF estimates that 15% of the world's population has some form of disability and between 110 million to 190 million adults worldwide have significant difficulties in functioning [7]. This is due exclusively to ageing and increased chronic health conditions [7]. In support of this, a study [9] in 2006 shows that an increase population of male and female with intellectual and other developmental disabilities is reaching older age.

Reports have suggested that there is high prevalence of disability in female than in male, however the pattern of disability varies between countries. This may be influenced by trends in health conditions and trends in environmental and others factors such as road traffic crashes, natural disasters, conflict, diet and substance abuse [7].

Robust evidence suggests that people with disabilities have poor health, less education and low socioeconomic status. Despite the

recent recommendation by World Health Organization (WHO) for mainstream programmes to meet the disabled individual's ordinary needs [7], they continue to suffer oral health diseases or conditions.

Mental disability

Numerous studies have established that adults with some sort of mental or cognitive disabilities have poor oral health [10, 11, 12, 13]. A longitudinal study [14] supports that person with mild intellectual disability experience more caries than that other objects in the study. Moreover, Chalmers et al [15] states that patient with dementia had higher experiences of oral diseases and conditions and that the higher experience is associated with the severity of dementia. There is also evidence that they have numerous unmet dental needs [16]. Paul [17] further highlighted that certain oral conditions appear more often in person with specific disabilities partly because of the disability itself, but also because of behaviour patterns associated with the disability.

Hearing Impairments

Hearing impairment also has oral health impact on adults. Shannon and Santhosh et al agrees that adults with hearing impairment have poor oral health [18, 19]. A study in children also suggests that hearing impaired patients tend to have poor oral health and high DMFT [20]. Lack of communication is the main issue that lead to poor oral health among hearing impaired patients [19]. Shannon [18] suggests that good sufficient communication should be established between oral health care provider and the patient, this includes patient wearing hearing aid, dentist speak directly without wearing musk, reduced background noise, provide written instructions and speak when the patient is looking. Moreover, Sandeep et al [21] discovered that visual instruction is an effective medium to oral health education in hearing impaired patient.

Visual Impairment

Kandelman and et al [22] found that visual impairment affects adult patient's ability to maintain oral hygiene and recognise signs of oral diseases such as caries and periodontal disease. A pilot study further states that they are not in a position to detect and recognise early signs of oral diseases [23]. Thus, they need supervision to achieve optimum oral health. Watson [24] further stress that developing oral health promotions that ensures patient with a visual impairment have appropriate information regarding oral hygiene and its provision is of paramount importance.

Physical Disability

On the other hand, adults with physical disabilities cannot care for their oral health due to paralysis [25], the main drawback in maintaining good oral health. This was confirmed by Neuman [26]. Also, a survey [27] in Southern Australia demonstrates that 76.3% of the adult population with physical and intellectual disabilities had caries experience (DMFT>0). In addition, 70% of Greek dentists interviewed states that treating a patient with physical and intellectual impairment demanded a lot of time and was hard to accomplish [28]. For these same reasons, Irish dentists suggested that additional fee were deemed necessary for the treatment of special need patients [29]. Thus, these special need patients might have higher experiences of poor oral hygiene.

Other identified factors that contribute to poor oral health of adults with disabilities includes fear and anxiety, financial constrain, physical barriers, lack of time and domiciliary equipment and transportations [30, 31, 32, 33, 34].

WHO-ICF International Classification of Functioning, Disability and Health

The ICF is a classification of health and health-related conditions for children and adults which was developed by the World Health Organization (WHO) and published in 2001 [35]. The WHO considers the ICF classification system as a partner to the ICD (International Classification of Diseases and Related Health Problems) system. Whereas the ICD classifies disease, the ICF looks at functioning. Therefore, the use of the two together would be beneficial. The ICF is not based on aetiology or "consequence

of disease," but as a component of health [36].

The ICF describes health and health related domains using standard language and recommends use of the same for the purposes including: collection of statistical data, clinical research, clinical use and social policy use.

Components of ICF

The ICF framework consists of two parts: Functioning and Disability and Contextual Factors. These parts are further broken down in the following manner.

Functioning and Disability includes

I. Body Functions and Structures - describes actual anatomy and physiology/psychology of the human body.

II. Activity and Participation - describes the person's functional status, including communication, mobility, interpersonal interactions, self-care, learning, applying knowledge, etc.

Contextual Factors include

I. Environmental Factors

Environmental factors are those that are not within the person's control, such as family, work, government agencies, laws, and cultural beliefs.

II. Personal Factors

Personal factors include race, gender, age, educational level, coping styles, etc. Personal factors are not specifically coded in the ICF because of the wide variability among cultures.

Rendovah District, Solomon Islands

Rendovah island district has a total land area of 411.3sq.km with an average elevation of 30 meters. The 2009 Census estimates that the South Rendovah with 334 houses has a population of 2,477 while the North Rendovah with 451 houses has a population of 1,724. The map of Rendovah district (Fig 1) shows the villages scattered along the shore line. There is no tar sealed road on this island district, neither public vehicle and the main transport mode is use of boats.

The PI was born and brought up in the village called Ughele in North Rendovah.

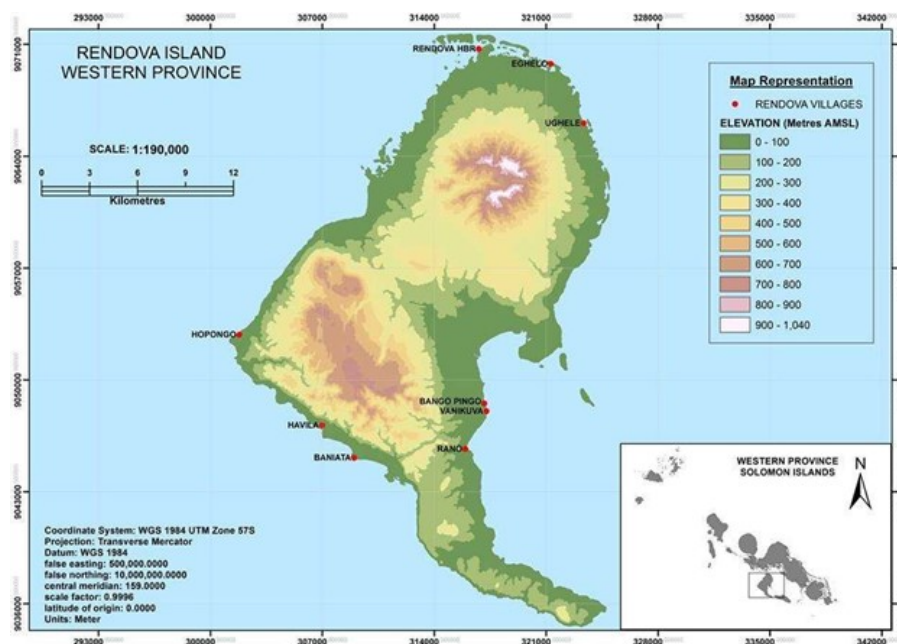


Figure 1: Map of Rendovah District

Being brought up in a village in Rendovah district, The Principal Investigator has seen people having difficulty in accessing dental services. Due to lack of transportation and low socio- economic status, Moreover, most people don't see the value of their teeth or their oral health in general. Thus, it is decided to carry out this research to gather, analyse and interpret data to show responsible authorities and stakeholders the urgent need to provide dental service.

As advised by the DOHRC and CHREC and due to other constraints, the study will be conducted among the villages of the Northern region of the Rendovah island district. PI will be staying in his family house and reach the nearby villages on foot or by boat along seashore.

In addition, it would be easier for the Principal Investigator to approach the key stakeholders for this research project because of the familiarity of the geography of the district and people.

Aims and Objectives

The Aim of the study is to determine the Oral health status of non-institutionalized adults with disability related to body structures and activities in Rendovah District in Solomon Islands.

The objectives of this study are:

- To identify the common disabilities of adults related to body structures and activities in Rendovah District, Solomon Islands.
- To determine the Oral health status of adults with disability related to body structures and activities in Rendovah District, Solomon Islands

Methodology

Study Type, Variables, Data Collection Technique

Study Type

This is a cross-sectional study carried out among non-institutionalized adults with disability. Considering factors such as constraints in conducting general clinical examination in a household environment, non-availability medical records and other logistics, this study concentrated only on adults with physical disability as explained in the ICF classification that may have direct or indirect relationship to maintenance of oral health.

Inclusion criteria: Adults with physical disability in relation to body structures and activities. This will include visible structural body abnormalities, vision, hearing, speech and activities of mobility and routine functions.

Exclusion criteria: Adults with other disabilities such as mental functions, other systems of the body, and environmental factors explained in the ICF classification. Severe disabilities that prevent proper oral examination and use of medications that have effects on oral health will also be exclusion criteria.

Data Collection Instruments

Tools used in the study are:

- i. **WHO Oral Health Assessment Form, 2013** to identify oral health parameters.
- ii. **Instructor assisted questionnaire for Disabilities** with questions extracted on disability in relation to body structures and activities from the WHO-ICF International Classification of Functioning, Disability and Health.
- iii. **Basic Oral examination set:** This includes dental mirror, WHO probe and explorer.

ICF Coding

ICF codes utilize an alphanumeric system to describe health and health-related domains, with the following letter codes:

- b - Body functions
- s - Body structures
- d - Activities

Variables

This study has following variables:

Dependent Variables

- Oral health parameters of the disabled adults
 - Disability features in relation to body structures and activities
- #### Independent Variables

- Age
- Sex
- Ethnicity

Data Collection Technique

Study Population: Adults with Disability related to Body Structures and Activities in Rendovah District, Solomon Islands. The study area of North Rendovah has an estimated total population of 1,724.

Data Collection

A study by Kuruvilla and Joseph [37] in 1999 discussed the use of Rapid Rural Appraisal and House-to-House Survey as methods that could be used to comprehensively identify people with disability in a community. The first phase of the study will be conducted as a Rapid Rural Appraisal where the information about possible households of each village with disabilities will be obtained through various sources in the community such as village chiefs, headsmen, community health workers and community social workers. The information obtained will be mapped with the targeted houses marked and will be used for subsequent phase: house-to-house survey.

During the house visit, the Participant information sheet was issued to potential participants or care-giver or a family member and thorough explanations was provided in the local dialect by the principal researcher. Upon acceptance, the participants were given the consent form for written approval by themselves or by third party.

Instructor assisted questionnaire for Disabilities

The Instructor Assisted questionnaire for disabilities was completed by interview with participant in the presence of care-giver or a family member.

As described earlier, this questionnaire was prepared to crudely assess the body structure (S), body functions (B) and activities (D). Original questions were extracted from the validated questionnaire recommended for surveys and the original codes will be used. As a final year BDS student the PI is capable of identifying gross abnormalities of the body as mentioned in the questionnaire while details of functions and activities could be obtained by questioning, hence this will be an instructor assisted questionnaire. The presence of Co-Supervisor will ensure the accuracy of the process.

Conduct of Oral Examination- WHO oral health assessment form

The WHO oral health assessment form was used to collect data. With the guidance of the co- investigator in Solomon Islands, who is an official of the MOH, access to sterilised instruments would be obtained from the nearby health facility. Participants were examined in their living premises in a suitable sitting position under natural light. Disposable gloves and pre-sterilised sets of basic dental instruments will be used for the Oral Examination. Used instruments were washed and cleaned soon after examination and returned to the health facility for re-sterilization.

Sampling

Convenience sampling technique will be employed in this study. A total sample of 50 adults with disabilities will be recruited to participate in this study.

Plan for Data Collection

The village nurse was consulted about any disabled adults in the village. The principal investigator was accompanied by the co-supervisor during the data collection. Upon locating the disabled adults in the community, the participant information sheet was, either to the participant or the care-giver, depending on the level of education of the participant and care-giver. Thorough explanations were provided by the researcher in the local dialect. If the participant has agreed to take part in the study, an Oral examination was carried out using the modified WHO form.

Data Processing and Analysis

Microsoft excel 2013 was used to analyse the data.

Ethical Considerations

Approval was sought from the Department of Oral Health Research Committee and College Health Research and Ethics Committee and the National Health Research and Ethics committees of Solomon Islands. The final approval was obtained from the Rendovah Council of Chief to carry out the survey in Rendovah district, Solomon Islands. All data collection forms were coded and kept in a safe place for a period of seven years and then destroyed unless required by law. Participants in need of dental treatment were referred to appropriate health facility.

Informed written consent was obtained from participants and a third-party consent (either a family member or a caregiver) was invited in the consent process as either a witness or a surrogate decision-maker. A witness observes the consent process and attests that the oral presentation of information made by the investigator is consistent with the disclosures made in the informed-consent document. A witness may also help the potential subject to understand the presented information so that he or she can make an informed decision regarding participation. A surrogate decision-maker acts for the potential subject and actually decides if the potential subject will participate in the study.



Pre-test

On the advice of the co-investigator, prior to the actual research, this study will be pretested among five individuals with similar characteristics to the study population in the same locality.

The Principal Investigator was calibrated on the Oral examination and the use of the instructor assisted questionnaire for disabilities by the DOH research coordinator and the Principal Supervisor.

Results

Description of Sample

The targeted sample size was 50, however due to advice and restrictions from CHREC to limit the study to the northern region of the district, only 46 participants were recruited. Of the 46 participants, 23 were male and 22 females with a male-to-female ratio of 1.1:1.

The participants' age ranged from 50-89 with an average age of 74 years. Table 1 and Figure 2 shows that there were more participants in the age range 70-79 years but less in 60-69 years. Figure 1 shows that more male participants were recruited than female.

Table 1: Age and Gender Distribution

Age Group	Frequency	Gender	
50-59	8	M	23
60-69	5	F	22
70-79	18		
80-89	14		

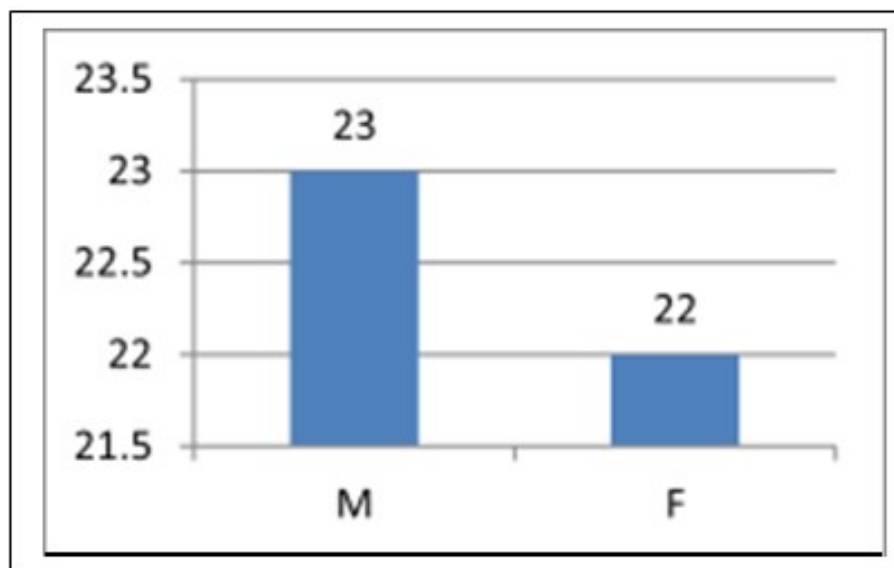


Figure 1: Bar Graph Showing Gender Distribution

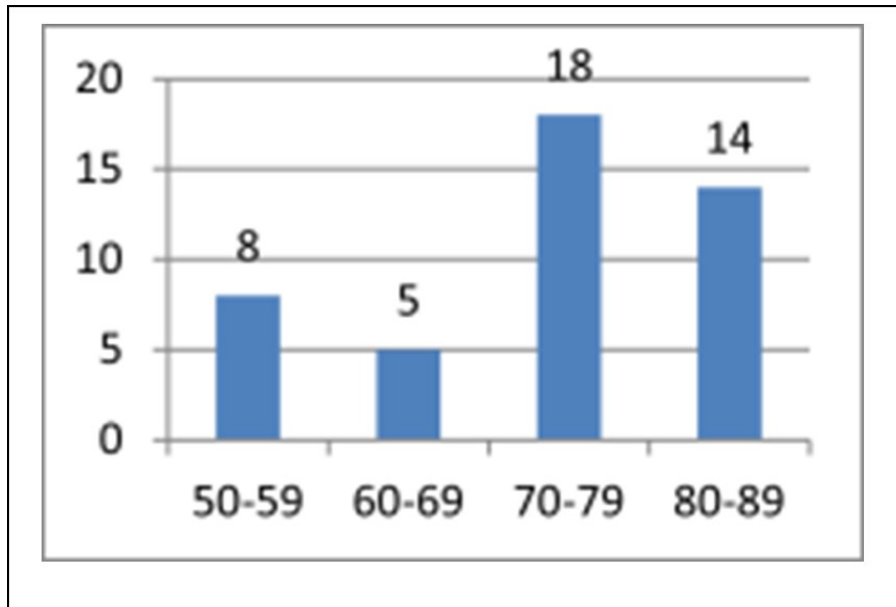


Figure 2: Bar Graph Showing Age Range Distributions

Description of Disabilities

Disabilities were grouped into six (6) groups based on their disability type to ascertain the most frequent type of disability.

Disability	Frequency
VISION	26
JOINT	10
HEARING	9
LEG	5
HAND	4
NERV	3

Table 2: Table showing types of disabilities and their Frequency

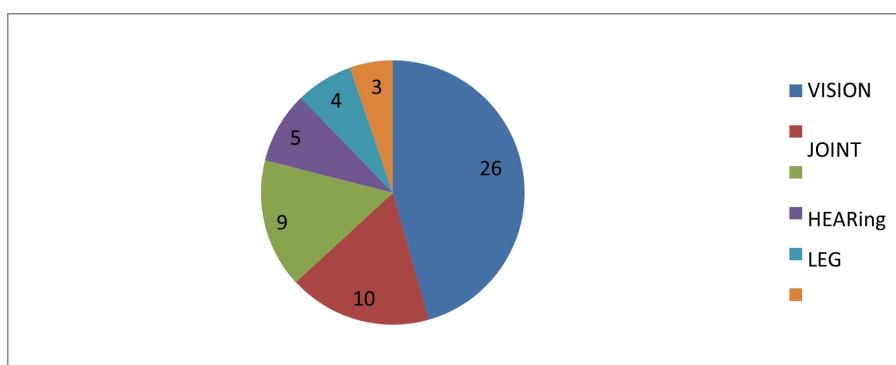


Figure 3: Pie Chart showing distribution of the types of disabilities

Figure 3 show that vision has the highest frequency, meaning to say that more participants have visual impairments and impairment related to Nerve was the least frequent types.

Now that we have established the most common type of disability in Rendovah district, the types of disabilities were again grouped into four (4) basic groups, namely Visual, Body, Hearing impairments and others. Visual impairments include those with partially blind, blind due to aging and those that blind from birth, Body impairments include hand, joint, leg and nerve impairments, Hearing group are those that are deaf, either at birth or aging, others group are those elderly that has disabilities other than mentioned above. These include, cleft palate, voice function and fluency of speech and limited body activities

While analysing the data, it was found that one person can have more than one type of disabilities, thus the basic groups were re-grouped into six (6) subgroups for analysis purposes.

Table 3 and figure 4 indicates that more of the participants have visual and body combined while visual, body and hearing combined and others have the lowest frequency.

Disability						
	Visual+Body+Hearing	Visual+Body	Visual	Body	Hearing	Others
	0	3	0	0	1	1
	0	0	3	13	0	0
	5	16	2	3	6	2
	0	0	4	1	0	0
	3	4	1	0		3
		0	0	4		0
		7	8	7		5
		13	0	2		
			0	0		
			0	6		
			11			
			3			
Mean	1.6	5.4	2.7	3.6	1.8	1.6
SD	2.3	6.6	1.6	5.5	2.9	1.3

Table 3: Table showing frequency of Disabilities subgroups

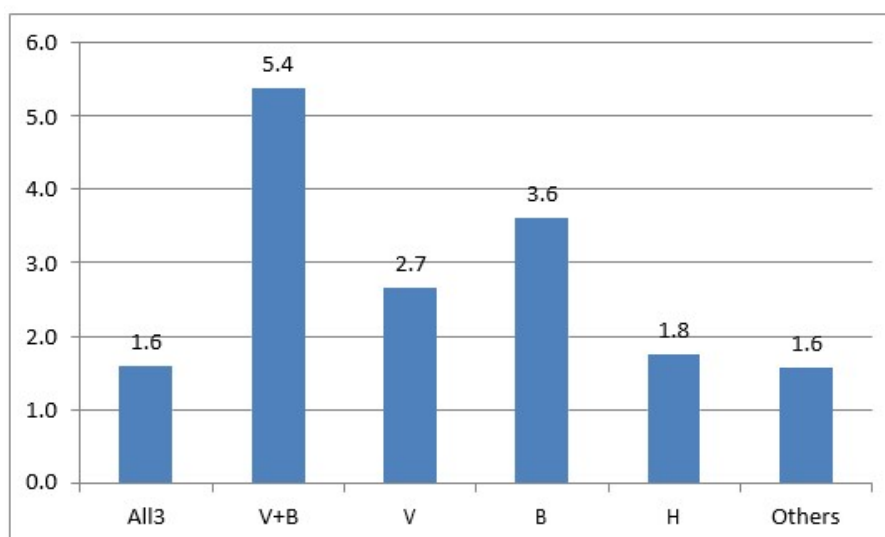


Figure 4: Bar Graph showing Frequency of Disabilities subgroups**Dentition Status**

The dentition status as measured by the mean DMFT was 23 ± 3.1 (mean \pm SD). Although there were no similar studies to compare the data at the country level, similar studies in Pakistan (DMFT = 16.3) and the USA (DMFT = 18.3) clearly shows that disabled adults in Rendovah has poor dentition status. [38.39]

Disability Type	D	M	F	DMFT(mean)	Frequency
ALL 3	3	132	0	135(27)	5
V+B	27	172	0	199(25)	8
V	24	249	0	273(23)	12
B	19	173	0	192(22)	9
H	2	71	0	73(18)	4
O	5	171	0	176(25)	7
Total (Mean)				23	
SD				± 3.1	

Table 4: Table Showing the DMFT of the Participants**Periodontal Status**

The periodontal status of the participants as measured by the modified Community Periodontal Index was summarised in table 5 below.

Disabilities	Dentate (n)	Healthy (%)	Bleeding (%)	Pocketing (%)	Attachment loss(%)	Excluded Edentulous(n)
V+B+H	1	0	100	100	100	4
V+B	4	0	100	100	100	4
V	5	0	100	100	100	7
B	5	0	100	100	100	4
H	2	0	100	100	100	2
O	2	0	100	100	100	5
	Total	0	100	100	100	

Table 5: Shows the Frequency of Periodontal Status of the different types of Disabilities

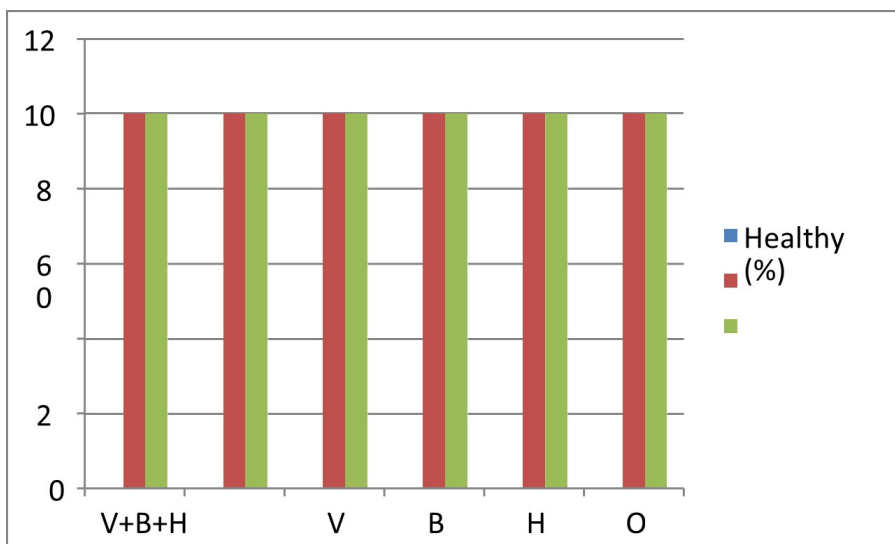


Figure 5: Graph showing Frequency of different types of Disabilities

Table 5 and figure 5 shows that none of the 64% dentate (n=28) patient has healthy periodontal condition, ALL the dentate (28) participants has bleeding gums and periodontal pocketing, indicative of periodontal diseases.

Denture Status

Sixty four (64%) per cent of the participants were dentate with and average teeth of 15, ranges from 1- 15 teeth. The remaining 36% were edentulous.

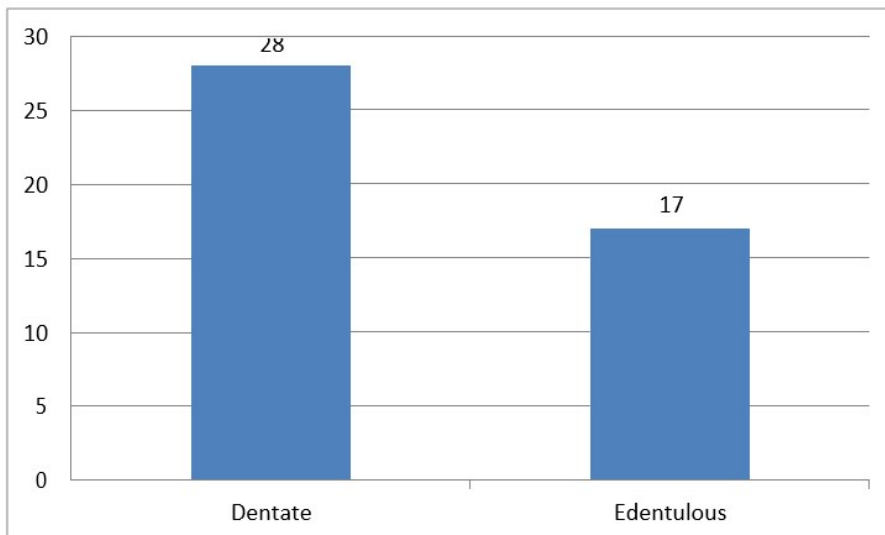


Figure 6: Bar Graph showing Dentate Vs Edentulous Participants

Of the 36% edentulous participants 65% wear complete upper and lower denture, the remaining 35% didn't.

Out the 64% who are dentate, none wear any partial denture despite they have missing teeth.

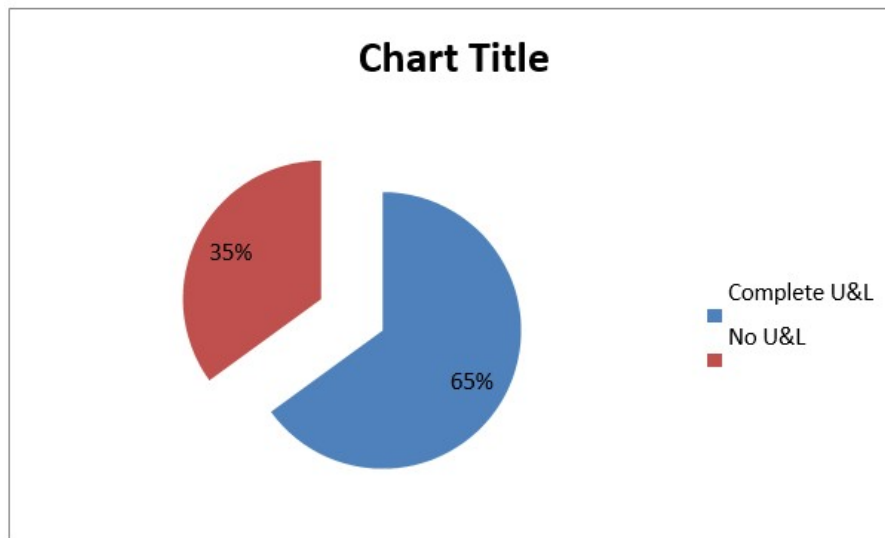


Figure 7: Pie Chart showing % of complete denture Wearer

Oral Mucosal Lesion Status

There is no Oral mucosal lesion detected in any of the participants

Discussion

The study reflects the poor oral health status of the elderly with disabilities in Rendovah District. Higher mean DMFT, higher prevalence of periodontal diseases and edentulousness are the major oral health problems facing the participants.

Similar studies in Pakistan and the USA also reported that elderly and disabled population have poor oral health status. [38; 39]

Participants with visual, body and hearing impairments combined and visual and body combined has the highest mean DMFT, while participants with hearing impairments alone has a lower DMFT score.

Robust evidences [18, 19, 20, 22, 23,27,26,25] have shown that individual disabilities is a risk factor to poor oral health, this study shows that participants with more than one type of disability has higher DMFT. This is an indicative of larger magnitude of the impact of disability on oral health status of the patients.

Although there is no oral mucosal lesion detected in any of the participants, there is higher prevalence of periodontal diseases exist as measured by CPI. This is an indicative poor oral hygiene practice among the disabled adults despite type and severity of the disabilities they have. Lack of knowledge of good oral health is evident. This study reveals that 100% of the 64% of the participants who are dentate suffered from periodontal disease. This result is more severe compared to the Pakistan and USA study which has 70% and 80.3% respectively.

Moreover, this study contradicts the year 2000 study [6] which indicated that there is a mark increased prevalence of Oral cancer in adults in Solomon Island. This is due to the religious belief of the participants. Even though, their religious background was not obtained, most of the participants were members of the Seventh Day Adventist Church, which has a strong teaching of healthy diet and abstinence from alcohol, tobacco and areca nut chewing.

Numerous evidence has shown the reason for poor oral health status of the disabled adults. Waldron S et al [18] pointed out that

adults with visual impairments are unable to recognize signs of oral diseases and have limited ability to maintain oral health. Difficulty accessing oral health services without assistance is one other reason why visual impaired adult continue to suffer poor oral health.

Peterson et al [22], pointed out that adults with body impairments have difficulty caring for themselves regarding oral hygiene practice, unable to access services is also highlighted as one factor contributing to poor oral health status in adults with body disabilities.

Lack of communication is the major obstacle facing hearing impaired adults. Communication is a two-way process, where a speaker and a listener are involved. In this case, there is no listener. This barrier in delivering oral health hygiene by dental professionals and restricting the victim to hear and understand the oral health education continues to contribute to the poor oral health status of hearing-impaired adults. This was highlighted by Waldron and Santhosh. [18, 19]

Other factor limiting the full participation and practice of good oral hygiene by the disabled adults were fear and anxiety, financial constraint, physical barriers, lack of time and domiciliary equipment and transportation. [30,31,32,33,34]

Conclusion

The current study clearly indicates that oral health status of the disabled adults in Rendovah District is very poor.

There is a need for commitment at the national level to care for this vulnerable population, this includes: building public policy that consider free oral health services for the disabled, reorienting the oral health services so equal distribution of services reached the vulnerable population. Physical barriers should be removed from the health centre for easy accessibility for the disabled.

The policy should be clear and should be backed by sufficient resources. It is time the Solomon Island government accelerates senior citizen and especially the vulnerable and disabled health care programs and provide them with benefits they deserve so as to improve the overall quality of life and wellbeing among the disabled adults.

Oral health service providers should be given special training to tackle issues facing the vulnerable populations.

Community nurses or health workers should be trained with basic skills to detect oral diseases.

Caregiver and relatives should be educated on oral health care and dietary impact on oral health.

If similar study was to be carried out, a larger sample size would be recommended and that TMJ assessment could be included in examinations and assessment.

Otherwise, a large nationwide survey should be conducted to give a reliable picture of oral health status of these vulnerable adults.

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VIII. Classmates for support and encouragement

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Data Collection Instruments

WHO Oral Health Assessment Form for Adults 2013



World Health Organization
Oral Health Assessment Form for Adults, 2013

Annex 1

(1)	Leave blank	Year	Month	Day	Identification No.	Orig/Dupl	Examiner
	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
	(4)	(5)	(6)	(7)	(10)	(11)	(14)
	(13)	(14)	(15)	(16)	(17)	(18)	(19)
General information:							
				Sex 1=M, 2=F	Date of birth		Age in years
(Name) _____				<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
				(18)	(19)	(24)	(25)
				(26)			
Ethnic group (27) <input type="text"/>		Other group (29) <input type="text"/>		Years in school (31) <input type="text"/>		Occupation <input type="text"/>	
	(28)		(30)		(32)		(33)
Community (geographical location) (34) <input type="text"/>				Location Urban (1) Periurban (2) Rural (3) <input type="text"/>			
			(35)				(36)
Other data _____ (37) <input type="text"/>				Other data _____ (39) <input type="text"/>			
			(38)				(40)
Other data _____ (41) <input type="text"/>				Extra-oral examination _____ (43) <input type="text"/>			
			(42)				(44)
Dentition status						Permanent teeth	
						Status	
						0 = Sound	
						1 = Caries	
						2 = Filled w/caries	
						3 = Filled, no caries	
						4 = Missing due to caries	
						5 = Missing for any another reason	
						6 = Fissure sealant	
						7 = Fixed dental prosthesis/crown abutment, veneer, implant.	
						8 = Unerupted	
						9 = Not recorded	
						Gingival bleeding	
						Score	
						0 = Absence of condition	
						1 = Presence of condition	
						9 = Tooth excluded	
						X = Tooth not present	
						Pocket	
						Score	
						0 = Absence of condition	
						1 = Pocket 4-5 mm	
						2 = Pocket 6 mm or more	
						9 = Tooth excluded	
						X = Tooth not present	

<p>Loss of attachment</p> <p>Severity</p> <p>0 = 0-3 mm 1 = 4-5 mm Cemento-enamel junction (CEJ) within black band 2 = 6-8 mm CEJ between upper limit of black band and 8.5 mm ring 3 = 9-11 mm CEJ between 8.5 mm and 11.5 mm ring 4 = 12 mm or more CEJ beyond 11.5 mm ring X = Excluded sextant 9 = Not recorded</p> <p>* Not recorded under 15 years of age</p>	<p>Index teeth</p> <table style="margin: auto; border-collapse: collapse;"> <tr> <td style="padding: 2px;">17/16</td> <td style="padding: 2px;">11</td> <td style="padding: 2px;">26/27</td> </tr> <tr> <td style="padding: 2px;">(173)</td> <td style="padding: 2px;">(174)</td> <td style="padding: 2px;">(175)</td> </tr> <tr> <td style="padding: 2px;">(176)</td> <td style="padding: 2px;">(177)</td> <td style="padding: 2px;">(178)</td> </tr> <tr> <td style="padding: 2px;">47/46</td> <td style="padding: 2px;">31</td> <td style="padding: 2px;">36/37</td> </tr> </table>	17/16	11	26/27	(173)	(174)	(175)	(176)	(177)	(178)	47/46	31	36/37	<p>Enamel fluorosis <input type="text"/> (179)</p> <p>Severity</p> <p>0 = Normal 1 = Questionable 2 = Very mild 3 = Mild 4 = Moderate 5 = Severe 8 = Excluded (crown, restoration, "bracket") 9 = Not recorded (unerupted tooth)</p>
17/16	11	26/27												
(173)	(174)	(175)												
(176)	(177)	(178)												
47/46	31	36/37												
<p>Dental erosion</p> <p>Severity <input type="text"/> (180)</p> <p>0 = No sign of erosion 1 = Enamel lesion 2 = Dentinal lesion 3 = Pulp involvement</p> <p>Number of teeth affected</p> <p>(181) <input type="text"/> <input type="text"/> (182)</p>	<p>Dental trauma</p> <p>Status <input type="text"/> (183)</p> <p>0 = No sign of injury 1 = Treated injury 2 = Enamel fracture only 3 = Enamel and dentine fracture 4 = Pulp involvement 5 = Missing tooth due to trauma 6 = Other damage 9 = Excluded tooth</p>	<p>Number of teeth affected</p> <p>(184) <input type="text"/> <input type="text"/> (185)</p>												
<p>Oral mucosal lesions</p> <p><input type="text"/> (186) <input type="text"/> (187) <input type="text"/> (188)</p> <p>Condition</p> <p>0 = No abnormal condition 1 = Malignant tumour (oral cancer) 2 = Leukoplakia 3 = Lichen planus 4 = Ulceration (aphthous, herpetic, traumatic) 5 = Acute necrotizing ulcerative gingivitis (ANUG) 6 = Candidiasis 7 = Abscess 8 = Other condition (specify if possible) 9 = Not recorded</p>	<p><input type="text"/> (189) <input type="text"/> (190) <input type="text"/> (191)</p> <p>Location</p> <p>0 = Vermillion border 1 = Commissures 2 = Lips 3 = Sulci 4 = Buccal mucosa 5 = Floor of the mouth 6 = Tongue 7 = Hard and/or soft palate 8 = Alveolar ridges/gingiva 9 = Not recorded</p>	<p>Denture(s)</p> <p style="text-align: center;">Upper <input type="text"/> (192) Lower <input type="text"/> (193)</p> <p>Status</p> <p>0 = No denture 1 = Partial denture 2 = Complete denture 9 = Not recorded</p>												
<p>Intervention urgency <input type="text"/> (194)</p> <p>0 = No treatment needed 1 = Preventive or routine treatment needed 2 = Prompt treatment (including scaling) needed 3 = Immediate (urgent) treatment needed due to pain or infection of dental and/or oral origin 4 = Referred for comprehensive evaluation or medical/dental treatment (systemic condition)</p>														

Instructor Assisted Questionnaire for Disabilities

FIJI NATIONAL UNIVERSITY, College of Medicine, Nursing and Health Sciences, Department of Oral Health
DATA Collection Tool for Adults with Disability related to Body Structures and Activities

NOTE: This is an Interviewed Instructor Assisted Questionnaire.

The Principal Investigator will obtain answers to each question from the participant or family member / caregiver
 All information will be maintained under confidential cover

Participant Code: Age (yrs) Gender Data Entry

Questions extracted from ICF Classification (WHO International Classification of Functioning, Disability and Health)

(S) BODY STRUCTURE

1. Presence of any major visible abnormality associated with following structures:

	Yes	No	if 'yes' describe
Head/ Neck	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text"/>
Shoulder- s 710	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text"/>
Upper extremity- s 730	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text"/>
Pelvis- s 740	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text"/>
Lower extremity- s 750	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text"/>

(B) BODY FUNCTIONS

	Yes	No	if 'yes' describe
2. Visual functions- Any diagnosed visual problem? b 750	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text"/>
3. Hearing function- Any diagnosed hearing problem? b 230	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text"/>
4. Voice functions - Production of voice (phonation) abnormal? b 310	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text"/>
5. Fluency of speech- Articulation function abnormal? b 320	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text"/>

(D) ACTIVITIES –

Mobility-

	Yes	No, (needs assistance)
6. Body position Able to change basic body position by self? d 410	<input type="checkbox"/>	<input type="checkbox"/>
7. Lying down position Able to do by self? d 4100	<input type="checkbox"/>	<input type="checkbox"/>
8. Squatting position Able to do by self? d 4101	<input type="checkbox"/>	<input type="checkbox"/>
9. Kneeling position Able to do by self? d 4102	<input type="checkbox"/>	<input type="checkbox"/>
10. Sitting position Able to do by self? d 4103	<input type="checkbox"/>	<input type="checkbox"/>
11. Standing position d 4104	<input type="checkbox"/>	<input type="checkbox"/>
12. Lifting objects by hand Able to do by self? d 4300	<input type="checkbox"/>	<input type="checkbox"/>
13. Carrying in the hands Able to do by self? d 4301	<input type="checkbox"/>	<input type="checkbox"/>
14. Picking up small objects by hand Able to do by self? d 4400	<input type="checkbox"/>	<input type="checkbox"/>
15. Grasping small objects by hand Able to do by self? d 4401	<input type="checkbox"/>	<input type="checkbox"/>

	Yes	No, (needs assistance)
16. Walking short distances Able to do by self? d 4500	<input type="checkbox"/>	<input type="checkbox"/>
17. Moving around within the home Able to do by self? d 4600	<input type="checkbox"/>	<input type="checkbox"/>
18. Moving around outside the home Able to do by self? d 4602	<input type="checkbox"/>	<input type="checkbox"/>
19. Moving around using aids (wheelchair walker, stick) Able to do by self? d 465	<input type="checkbox"/>	<input type="checkbox"/>
20. Using transportation as a passenger Able to do by self? d 4708	<input type="checkbox"/>	<input type="checkbox"/>

	Yes	No
Self-care 21. Washing oneself Able to do by self? d510	<input type="checkbox"/>	<input type="checkbox"/>
22. Caring for Oral Health -brushing teeth, Able to do by self? d 5201	<input type="checkbox"/>	<input type="checkbox"/>
23. Toileting and cleaning oneself afterwards. Able to do by self? d 530	<input type="checkbox"/>	<input type="checkbox"/>
24. Dressing Able to do by self? d540	<input type="checkbox"/>	<input type="checkbox"/>
25. Eating Able to do by self? d550	<input type="checkbox"/>	<input type="checkbox"/>
26. Drinking Able to do by self? d560	<input type="checkbox"/>	<input type="checkbox"/>
Domestic life 27. Preparing meals Able to do by self? d630	<input type="checkbox"/>	<input type="checkbox"/>
28. Doing housework Able to do by self? d640	<input type="checkbox"/>	<input type="checkbox"/>
Personal Health, Caring for oneself		
29. Has awareness of current disease conditions? d5701	<input type="checkbox"/>	<input type="checkbox"/>
30. Willing to seek medical care if needed? d5702	<input type="checkbox"/>	<input type="checkbox"/>

Participants Information Sheet

Participants Information Sheet

Research Project: Oral Health Status of Adults with Disability related to Body Structures and Activities In Rendovah District, Solomon Islands

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Dear Sir/Madam

I, Rayboy Seleso Jr, a fifth year BDS student at Fiji national University wish to conduct this research project on Oral Health Status of Adults with Disability related to Body Structures and Activities In Rendovah District, Solomon Islands

You are cordially invited to be part of this survey through your participation.

This study is based on the topic Oral Health Status of Adults with Disabilities in Rendovah District, Solomon Islands.

We will refer you to a nearby health centre should there be any essential treatment needed.

I. Your participation is voluntary

II. You have the right to withdraw from this study any time without any implications

III. All information is confidential, which means we will not publish any reference or description about you in any final reports, publication and the presented paper.

You have the right to question the study should you wish to. We appreciate you participation

Leana Hola (Thank you very much)

Consent Forms

Consent Form for participants

Consent Form

Title: Oral Health Status of Adults with Disability related to Body Structures and Activities In Rendovah District, Solomon Islands

- I understand the role I play in this survey
- I understand that my identity will remain confidential
- I have been given the opportunity to ask questions and satisfied with the answers provided by _____
- I also understand that I can withdraw my consent as this is voluntarily based.

I _____ hereby consent to participate in this survey without hesitation.

Name _____

Date ___/___/20___

Signature _____

Date ___/___/20___

Rayboy T Seleso Jr BDS5

Principle Researcher

Date ___/___/20___

Dr Ellison Vane Co-supervisor

Third Party Consent Form for Caregiver/Family member as a witness or a surrogate decision-maker.

Consent Form on behalf of the participant:.....

Title: Oral Health Status of Adults with Disability related to Body Structures and Activities In Rendovah District, Solomon Islands

- I understand the role myself and the participant named above play in this survey
- I understand that the identity of the participant will remain confidential
- I have been given the opportunity to ask questions on behalf of the participant and satisfied with the answers provided
- I also understand that the participant can withdraw consent as this is voluntarily based.

On behalf of the participant named above, I, the caregiver/family member

_____ hereby consent to include this participant in this survey as a

Witness, Surrogate decision-maker

Name _____

Date __/__/20 __

Signature _____

Caregiver / Family member

Rayboy T Seleso Jr BDS5

Principle Researcher

Date __/__/20 __

Dr Ellison Vane Co-supervisor

Email From Co-Supervisor

