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# **Gag Reflex in Prosthodontics: An Overview** *Yee*

*L.F., Yap E.W., Choudhary S., Tawfiq O.*

## **Abstract**

The management of patients whose gag reflex are easily triggered during dental procedures or persist after new denture insertion can be quite challenging for a dental practitioner. This involuntary response can be extremely uncomfortable and demotivates them to undergo further dental treatment, leading to negligence toward their oral health. It is, therefore, of utmost importance that proper management of patients with gag reflex should be undertaken to ease the dental procedure for both the dentist and patient. The purpose of this article is to provide an overview of the aetiology and modified approaches during complete denture fabrication for a patient with severe Gag Reflex.

**Keywords:** Gag reflex, Training denture, Torus palatinus

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## **Introduction**

In routine dental practice, dentist may come across patients that have extreme reflex in response to foreign object in the oral cavity. This is known as gag reflex. The normal gag reflex is a defensive mechanism controlled mainly by parasympathetic division of the autonomic nervous system (Ahmad, Yunus & Jafri, 2015; Bassi , Humphris & Longman, 2004). The main function of this innate involuntary mechanism is to guard and protect the upper respiratory tract and the digestive tract by preventing foreign objects from entering the pharynx (Ahmad et al., 2015). However, it can be acquired or adapted by various stimuli such as visual, olfactory, psychic, chemical or toxins transmitted via blood flow or the cerebrospinal fluid (Bassi et al., 2004 ; Craig, 1970).

During dental procedures, patient may experience unpleasant feeling, nausea or even rapid, aggressive vomiting which creates a difficult situation to manage. An unusually active gag reflex may upset and discourage the patient to proceed with the treatment, consequently leading to poor oral hygiene and function in the long run. (Yadav et al., 2011) Conditions such as early edentulism may be one of many complications that occur among these patients. Therefore, knowledge about gag reflex and its management is crucial to every dental practitioner for rendering successful dental treatment.

### ***Etiology of Gag reflex***

Gagging can be broadly classified as somatogenic or psychogenic in nature (Craig, 1970). Somatogenic gagging is due to any physical

stimuli. During dental treatment, the gag reflex is most often induced by tactile stimuli to certain trigger zones in the oral cavity. These trigger zones can be pinpointed using a ball point burnisher in various patients (Bassi et al., 2004). The trigger zones comprise of palatoglossal and palatopharyngeal fold, base of tongue, palate, uvula and posterior pharyngeal wall. Psychogenic gagging is, however, induced by non-tactile, visual, acoustic, olfactory, anxiety and imaginary stimuli (Newton, 1984).

Gagging is often considered to have a multifactorial etiology. These include:

- **Anatomic factors:**

The presence of anatomic abnormalities or neural hypersensitivity in the oropharynx has been suggested as factors in the development of gag reflex. A long soft palate or an abrupt drop at the junction of the hard and soft palates are associated with such problem (Ahmad et al., 2015; Bassi et al., 2004; Craig, 1970; Conny & Tedesco, 1983, Limaye, Naveen & Samant, 2010). An atonic and relaxed soft palate may often stimulate gagging by allowing uvula to contact the tongue and the soft palate to touch the posterior pharyngeal wall. Some radiologic investigations were carried out in a study in patients with gag reflex. However, no anatomic abnormalities were observed and it was cited that innervation or sensitivity of the vagus nerve could be the most likely cause for gagging in such patient (Wright, 198). Another study done on the patient with gag reflex showed that there were some cases where stimulation of the oral mucosa still caused the

gag reflex, regardless of the patient being unconscious under anaesthesia suggesting morphologic or anatomic factors as the most likely cause (Hainsworth et al., 2008)

- **Local and systemic disorders:**

Patients with some kind of nasal obstruction, deviated septum, postnasal drip, sinusitis, nasal polyps or congestion of the oro-nasal and pharyngeal mucosa are seen to have gag reflex. Underlying systemic conditions affecting the gastrointestinal tract may increase irritability by lowering the threshold for stimulation of the oral cavity (Ahmad et al., 2015; Bassi et al., 2004; Limaye et al., 2010)

- **Psychological factors:**

Stress, phobia, eating disorder, fear, visual, and olfactory stimuli can cause excessive retching. A study was conducted by Hainsworth et al. in 2008 on the psychosomatic characteristics of patients with retching. (Hainsworth et al., 2008). Fear of choking or suffocation during the dental treatment was the most common concern in such patients. The impact of previous or existing physical health problems such as respiratory diseases, family history of retching, and prevalence of other psychological difficulties were also highlighted as factors which predispose to gagging. A similar study by Randall et al. in 2014 showed a high co- relation between gagging and dental care-related fear(Randall et al., 2014). Bassi et al. in 2004 suggested that gagging may be strongly influenced by 2 major mechanisms of ‘learning history’ known as classical and operant conditioning.

## **Social factors:**

Heavy smoking and excessive consumption of alcohol can cause restriction of the airway resulting in hypersensitivity to oral stimuli and increase in the gag reflex (Ahmad et al., 2015).

- **Iatrogenic factors:**

Dentures, which have not been fabricated properly, can elicit gag reflex. Lack of posterior palatal seal, poor retention, disharmonious occlusion, restricted tongue space and overextended denture borders particularly the posterior aspect of the maxillary denture and the posterior lingual region of the mandibular prosthesis are considered as some of the causative factors. A smooth, highly polished denture coated with saliva may produce a 'slimy' sensation which is enough to cause gagging in some patients. Additionally, poor clinical techniques such as an impression tray overloaded with impression material causing excessive material to flow into the pharynx can also induce gagging (Craig, 1970; Kueber, 1984)

### *Assessment of gagging severity*

**Faigenblum** classified patients with gag reflex as Mild and Severe retching (Faigenblum, 1968). **Morstad** classified the phenomenon as an immediate type and a delayed type of gagging based on the reaction of a patient after denture insertion (Morstad, 1968). Immediate gagging is caused by overextended denture borders. The delayed type of gagging can occur after a time delay of two weeks to two months post insertion, and it may be due to an incomplete border

seal.

**Dickinson and Fiske** in 1983 provided scoring criteria for Gagging on a scale of one to five as follows:

Grade 1: Very mild - occasional and controlled by the patient.

Grade 2: Mild - control is required by the patient with reassurance from the dental team.

Grade 3: Moderate - consistent and limits treatment options.

Grade 4: Severe - routine treatment is impossible without some form of special measure.

Grade 5: Very severe - affect patient behaviour, dental attendance and makes treatment impossible.

**Saita et al in 2014** suggested another scoring criteria for assessment of gag reflex. Grade was determined based on degree of gag reflex on intraoral examination of anterior and posterior teeth with mouth mirror and probe. The following 5 grades were assigned: normal gagging but not desensitized (G1); mild gagging (G2); moderate gagging (G3); severe gagging (G4); or very severe gagging (G5). (Saita et al., 2013)

### **Management of Gag reflex**

Numerous methods and approaches have been devised previously to manage gag reflex patients. However, it is imperative to obtain detailed history and identify the triggering factors such as tactile,

olfactory, visual, auditory and cognitive stimulus before commencing the treatment. A sympathetic approach and positive attitude should be employed while treating patients with gag reflex which could be in the form of one or combination of the following techniques (Ahmad et al., 2015; Bassi et al., 2004; Limaye et al., 2010)

- **Relaxation-** Gag reflex is known to be triggered by anxiety. It is extremely helpful if patients are relaxed during every visit. This can be achieved by the dentist continuously giving reassurance and a calm dental setting (Bassi et al., 2004).
- **Distraction technique-** Landa in 1954 suggested having the patient count rapidly to 50 or read out loud to distract the patient (Landa, 1954). Kovat in 1971 suggested a technique in which the patient breathes through the nose and at the same time rhythmically taps the right foot on the floor (Kovat, 1971). Krol in 1963 recommended that patient's mind should be distracted by asking him to raise his foot up until it is too tiring and stressful for the patient to continue doing it any further (Krol, 1963)
- **Systematic desensitisation-**This technique includes incremental exposure of patient to the feared stimulus gradually, starting from mildly invasive to more aversive stimulus (Bassi et al., 2004). Thus, allowing the patient to gradually get adapted by developing ways to cope with the feeling of discomfort. Robb et al. in 1996 suggested brushing the hard palate gently with a toothbrush. The patient marked the position of the maxillary incisors on the toothbrush handle

where it did not induce gag reflex with the aim of gradually moving the brush more posteriorly (Robb & Crothers, 1996).

- **Sensory flooding** - This technique is only advisable to be implemented on the slight to moderate gag reflex patients. The concept is to educate the patient that physiological system cannot maintain its gag reflex intensity for long and will gradually fade, hence denture habituation in patients should happen within 30 minutes or so. This is done by encouraging the patient to wear the denture as long as possible while being reassured that the gag reflex will diminish. However, this method cannot be employed for patients with severe gagging problems(Bassi et al., 2004).
- **Fahmi F.M.'s method** - He advocated personal participation of the patient during impression making process by allowing the patient to place, support and remove the impression by himself. Active participation would give confidence and control over the situation thus preventing gag reflex (Fahmi, 1990).
- **Appleby and Days' finger massage technique** - Appleby and Days' technique advocated gently massaging the soft palate and applying salt to the impression surface of denture prior to insertion for better patient tolerance (Appleby & Day, 1956).
- **Singer's Marble technique** - Lee-Singer's technique required severe to hopeless gaggers to keep up to five marbles in their one at a time, at his leisure, until all five marbles were in his mouth. The patient was urged to keep the five marbles in his mouth continuously for one week, except when eating and

sleeping. On the subsequent visit, patient was encouraged to wear training denture bases with 3 marbles placed in the mouth. Patient was reassured every visit that he will be able to wear dentures. Upon issuing the final dentures, a “training bead” made of cold-curing acrylic resin was placed in between the lower central incisors and patient was educated to maintain the tongue on the bead (guide) (Singer, 1973).

- **Training bases** - This is another desensitization technique in which a thin acrylic denture base without teeth is fabricated. Patient is advised to wear the denture base for 5 minutes each day in the first week followed by 10 minutes, thrice a day. Time limit for wearing the denture base is gradually increased to 15 minutes, 30 minutes and 1 hour. If patient still encounters difficulties in wearing the training base, it would be advised to shorten the posterior border. Once the patient tolerance has improved, training base with anterior teeth can be worn by patient for a couple more weeks followed by posterior teeth placement (Yadav et al., 2011).
- **Reduction of palatal coverage of maxillary denture** - Farmer and Connelly in 1984 suggested that maxillary denture be reduced to a U-shaped border approximately 10 mm in length from the dental arch (Farmer & Connelly, 1984). Patient will then be able feel the warmth and texture of food, thus improving the sense of taste significantly alongside as the gagging tendency disappears. Pastorello in 1959 stated otherwise as he suggested that proper extension of denture covering the hamular notch and tuberosity area is important to

instil stability of denture which prevents it from slipping and touching the soft palate (Pastorello, 1959).

- **Pharmacological techniques-** Topical anaesthetic agents applied in the form of sprays, gels, mouth rinses, or injection may work for some patients, while in others they may increase nausea and vomiting. Nitrous oxide anaesthesia causes conscious sedation by altering the perception of external stimuli and it is suggested that this altered perception can cause reduction of gag reflex. Centrally acting drugs such as antihistamines, sedatives and tranquilizers have also been advocated as effective means for controlling gag reflex (Bassi et al., 2004 ; Goyal et al., 2014 ; Limaye et al., 2010 ; Robb et al., 1996).
- **Other complimentary methods-** Acupuncture, Acupressure and TENS have been proposed as other useful aids. Acupuncture points on the ear or forearm can control the gag reflex effectively during dental treatments (Lu, Lu & Reed, 2000; Fiske & Dickinson, 2000). A study done by Scarborough et al. devised bracelets for subjects to wear, which provided a consistent force on a palm pressure point, thereby reducing the gag reflex significantly(Scarborough et al., 2008).

## **Case report**

A 49 years old male patient visited Segi Dental Clinic with chief complaint of difficulty to chew food due to loss of teeth. Patient had been wearing his maxillary removable partial dentures with

replacements of anterior teeth for approximately 20 years and did not have a mandibular denture. Patient had no significant medical history. Intraoral examination revealed that patient was completely edentulous with respect to his maxillary arch and had multiple root stumps on an otherwise edentulous mandibular arch. Patient had a large torus palatinus of approximately 2.5cm in diameter. Patient was advised to undergo extraction of root stumps and fabrication of a complete denture. Root stumps were extracted and patient was scheduled for denture fabrication after a healing period of 4 weeks.

Prior to impression making, it was discovered that the patient had severe gag reflex (Grade 4, Dickinson and Fiske method), which made it extremely challenging for us to make the primary impression. The patient was further examined and trigger points were identified with the help of ball burnisher by moving it slowly barely touching the mucosa all over the oral cavity. Immediate gag reflex was provoked once the area around the posterior palatal seal was palpated. This area was identified as trigger zone (Bassi et al., 2004 ; Craig, 1970). Furthermore, the patient had a Class II tongue size according to House Classification which posed as a problem for mandibular tray insertion (Reddy, 2011). Tongue movement in such cases can cause the denture to lift and compromises the denture retention and stability.

Methods to manage gag reflex such as instructing the patient to focus on his breathing, constant conversing and asking the patient to raise his feet while rotating them were employed (Bassi et al., 2004; Goyal, 2014). Palatine nerve block was administered to intercept the neural pathways of gag reflex mechanism. Maxillary primary impression was

made using fast setting alginate to lessen the impression recording time.

After discussion with the patient, it was decided to apply desensitization technique using training denture bases for reducing gag reflex and consequently increase the patient's acceptability for the final denture. Using the diagnostic cast, a training base was constructed (Figure 1 and Figure 2). Patient was instructed to wear the training base for two weeks with an initial regime of 5 minutes every day, then followed by 10 minutes a day. A week later it was increased to 10 minutes 3 times a day. Gradually the time duration of wearing the training denture base was increased up to 1 hour, thrice daily. (Bassi et al., 2004 ; Yadav et al., 2011) Conventional methods were used for denture fabrication with some modifications to reduce patient's gag reflex. For example border moulding for the maxillary arch was modified to single step border moulding using silicone putty. (Figure 3)

It was observed that the patient could only tolerate the denture base up to posterior portion of the torus, which led to compromised retention as there was no posterior palatal seal. Thus it was decided to engage the undercuts around the large maxillary torus using Molloplast-B (Detax GmbH, Ettlingen, Germany), which is a permanent soft, resilient relining material (Abrahams, 2006). Some Molloplast-B was also placed at the mandibular anterior sharp ridge for comfort and to decrease occlusal loading on that area (Figure 4). The complete denture was issued (Figure 5) and the patient was advised on methods to adjust to the new complete denture and recalled back after a week

for review. On the review visit Gag reflex was ascertained again and was found to be mild (Grade 1, Dickinson and Fiske).

## **Discussion**

In this case, anesthetizing trigger zones while making impressions increased patient compliance. Training dentures helped the patient to learn to keep prosthesis in mouth gradually over a period of time and introduced sense of familiarity to the prosthesis. It was also helpful reducing the heightened sensitivity of the patient to oral stimuli. Consequently, subsequent procedures of denture fabrication were easier to perform. In order to further decrease the gagging sensation during border moulding, a single step border moulding method was used with silicone putty material and the final impression was taken with light-bodied silicone. This modification reduced the frequency of retching as compared to the conventional method. A denture fabrication without palatal coverage was not ideal in this patient due to lack of undercuts on the edentulous ridge and concerns regarding loss of retention and stability (Farmer et al., 1984 ; Pastorello, 1959). Therefore, Molloplast B was used at the impression surface of the denture around the torus palatinus. This prevented the hard acrylic from locking around the torus by engaging the torus undercut for added retention besides being a shock absorber by distributing the functional load across the denture base (Abrahams, 2006).

## **Conclusion**

Gagging during dental procedure can be a deterrent to successful prosthodontic treatment. Wide variety of management strategies have

been described and discussed in literature. In many situations, a combination of treatment techniques may be required to effectively manage gag reflex. However, a detailed history and identification of the cause is mandatory before we proceed with treatment of such patients.

Denture procedure	Modifications done
Preliminary impression	<p><b>Behavioural management</b></p> <ul style="list-style-type: none"> <li>○ Relaxation</li> <li>○ Distraction</li> </ul> <p><b>Therapeutic management</b></p> <ul style="list-style-type: none"> <li>○ Greater palatine nerve block</li> </ul>
Desensitization before denture fabrication	Provision of training denture bases
Border moulding and secondary impression	A single step border mould method was used with silicone putty material, impression taken with light-bodied silicone
Final denture processing	Molloplast-B placed on torus palatinus area and mandibular sharp ridge area during packing for comfort and to engage the torus undercut for additional retention
Denture insertion	<p>Patient was asked to wear the training denture base every day until day of insertion.</p> <p>Patient was instructed to practice controlled rhythmic breathing while wearing the denture.</p>

**Table 1-Summary of the Procedure**



**Figure 1. Diagnostic cast showing torus palatinus**



**Figure 2. Training base**



**Figure 3. Impression with single step border moulding**



**Figure 4. Tissue surface of dentures with Molloplast**



**Figure 5. Patient with his new complete denture.**

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# Awareness of presbyopia and factors influencing its correction among local community in Sibul, Sarawak

*Kay T. M., Nay L., Mohamad R.B.S., Margareth W.A.Y., Neoh P.S., Hazheem S.B.H., Randy O.M.H., Li Na.*

## Abstract

To determine awareness toward presbyopia among community settings and to assess the different barriers encountered in utilizing refractive correction. Cross sectional descriptive study, conducted between May to June 2015 in local community living in long houses in Sibul, Sarawak. Participants aged 35 years and above were included in the study. Sample size was calculated using simple random sampling method. Data collection was done by using sets of validated questionnaire assessing knowledge towards presbyopia and barriers for correction of presbyopia. A total of 123 eligible participants were included. Our study demonstrated that 57.8% of participants had presbyopia. There was a direct relationship between prevalence of presbyopia and increasing age ( $P = 0.006$ ) but no significant association between gender ( $p = 0.365$ ) as well as employment status ( $p = 0.5$ ) and presbyopia. Only 75 participants (61%) knew what is presbyopia and 48 (39%) did not know about it. Knowledge and awareness has little significance related to treatment ( $p = 0.538$ ). The main reasons for not seeking visual aids were lack of felt need and affordability. There is limited knowledge and awareness towards presbyopia in local communities. Community awareness regarding benefits of accurate near vision together with refractive services need to be promoted.

**Keywords:** Presbyopia, Near vision, Awareness, Correction, Barriers

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## **Introduction**

Presbyopia is an age-related near vision impairment, which results from the gradual decrease in accommodation with progressive ageing with multiple effects on quality of vision, and quality of life (Wilson, 1996). This process usually takes place around age of 40 and accelerates with age which is corrected by the reading spectacle (Patel et al., 2006). The exact age of onset of presbyopia varies widely among individuals depending on multiple factors such as accommodative ability, associated distance refractive error, climate, geographic variation, sex, and ethnicity.

As the symptoms develop and deteriorate, the range of clear vision may become inadequate for the individual to resume their daily activities (Mancil et al., 1998). The impact of this process varies from one person to another depending on their daily routine and task at hand. As the need to read and work at near and intermediate distances is important in all industrialized societies, presbyopia has both clinical and social significance. Globally, it was estimated in the year 2005 that nearly 1.04 billion people have presbyopia, 517 million of whom had no spectacles or inadequate spectacles. This global prevalence of presbyopia is expected to be 1.4 billion by 2020 and 1.8 billion by 2050. It was also estimated that visual disability due to presbyopia will affect the 563 million people worldwide by the year 2020 (Holden et al., 2008). Recently, it has been increasingly recognized that presbyopia contributes the global burden related to visual impairment and it was included in the World Health Organization action plan for

prevention of avoidable blindness and visual impairment (World Health Organization, 2010).

Many studies reported the prevalence of presbyopia which varies due to the variation in the methodology and definition use (Marmamula, Keeffe, & Rao, 2009 ; He et al.,2012 ; Nirmalan et al.,2006; Ehrlich, et al.,2013). Some studies reported the barriers for presbyopic correction (Wubben et al., 2014; Marmamula et al.,2011) but it is still under-reported in low-and middle-income countries (Patel & West, 2007).

Sarawak is a Malaysian state on the Borne Island. It is a home to many diverse ethnic groups including Iban, Chinese, Malay, Bidayuh, Melanau, and Orang Ulu. In Sarawak, local tribal people live in long houses which are the centre of communal life for Sarawakians. Many individual families live in separate apartment under one long roof. Sekuau Rumah Panjang is a group of long houses for Iban tribes located in Durin village which is approximately 37 kilometers from Sibu town. The nearest health care center is 4 kilometers from long house but do not provide eye care or refractive service. We conducted a survey regarding awareness towards presbyopia in the local tribal community and barrier for seeking correction.

## **Materials and Methods**

This is a cross sectional descriptive study, conducted between May to June 2015 in local community in Sekuau Rumah Panjang, Sibu, Sarawak. Participants aged 35 years and above were included in the study. Presbyopia is known to occur around 40 years of age but to

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detect early presbyopia we included the participants with age 35 years and above. Participants with prior or any coexisting ocular diseases were excluded. Sample size was calculated using simple random sampling method.

All the eligible participants were assessed for near visual acuity. Rosenbaum near vision card was used to assess the binocular near vision at 40 cm distance at outdoor illumination. The distance of 40 cm is maintained by a string attached to the bottom of near vision card at one end to the participant's chin at the other end. We adopted this method of near vision testing from Wubben et al (Wubben et al., 2014). For those who had reading spectacle both aided and unaided acuity were measured. Near vision assessment and brief interview for questionnaire were performed by year 4 medical students who completed their clinical ophthalmology posting and were trained for assessing visual acuity and basic ocular examinations.

Data collection was done by using standardized proforma which included demographic data, education level and occupation status together with sets of validated questionnaire assessing knowledge towards presbyopia and barriers that affect them from seeking correction for presbyopia. All the eligible participants were explained appropriately regarding the purpose of study and informed consent was taken. The main communication took place in Malay language but for those who had language barrier, interview was conducted in Iban language with the help of local translator. The study was conducted in accordance with tenets of the Declaration of Helsinki.

Data entry and analysis was done by using SPSS version 21. A p value of  $<0.05$  was considered as statistically significant.

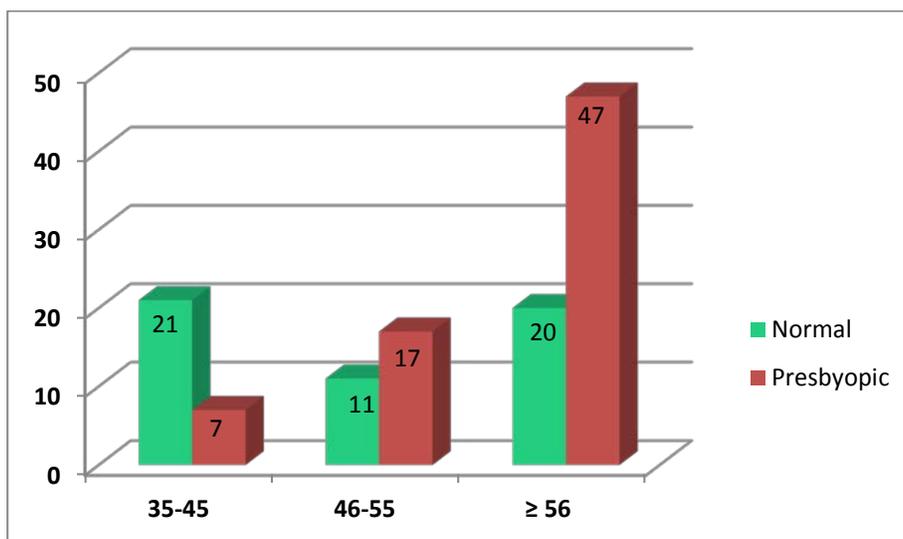
Uncorrected presbyopia is defined as binocular near visual acuity  $\geq J2$  at reading distance of 40 cm in participants. Barriers were defined as any reasons for not using spectacles in those with uncorrected presbyopia. All persons who presented with any visual impairment and those excluded due to coexisting ocular diseases were referred to nearest eye-care service for further management.

## **Results**

Of 130 potential participants, 7 were excluded due to pre-existing ocular diseases (3 blind eyes due to previous ocular trauma, 2 cataracts, 1 corneal scar and 1 optic neuropathy). A total of 123 participants, aged between 35 to 84 years were included. There were 41 (33.3%) males and 82 (66.7%) females and most of them (82%) were unemployed. Among them, 71(57.8%) of them had various degree of presbyopia (Figure 1). There was a direct relationship between prevalence of presbyopia and increasing age ( $P = 0.006$ ) but no significant association between gender ( $p = 0.365$ ) as well as employment status ( $p = 0.5$ ) and presbyopia. The proportion of participants with of presbyopia is 57.72% (95% confidence interval 48.49 to 66.58).

Regarding the awareness, majority 75 (61%) of participants, knew what is presbyopia and 48 (39%) did not know about it. Sources of information were peers (parents/relatives/friends/ colleagues), media and word of mouth. It was noted that only 26 (36.6%) out of 71

presbyopic participants had corrective spectacles. Knowledge and awareness about presbyopia has little significance when it comes to seeking treatment ( $p = 0.538$ ). Among those who had presbyopic correction, 48.57% sought treatment from GPs or Ophthalmologist, 37.14% from opticians and 14.29% by other methods. The main barriers reported were lack of felt need and affordability (Table 1).



**Figure 1. Presbyopia in age groups**

<b>Reasons</b>	<b>Number reported</b>
Lack the felt need	33
Low income	15
Lack of awareness	12
Distance to travel	10
Too expensive	5
Distance and low income	4
Others	7

**Table 1. Barriers to seek proper aids for presbyopia**

## Discussion

Our study demonstrated the universal pattern of presbyopia which associated with increasing age. Some studies reported that female sex as a risk factor (He, 2012; Patel, & West, 2007). But this study revealed no significance relationship. The prevalence of presbyopia has been reported by many studies with widely varying rates partly due to differences in methodology of the studies. Prevalence of presbyopia in developing countries was reported as approximately 44% in Timor Leste (Ramke et al., 2007) , 54% in Brazil (Duarte , 2003) , 62% in Tazania (Burke et al, 2006) and 70% in South India<sup>8</sup>. The proportion of presbyopic participants in this study was 57.7%.

It was noted that only 61% of participants were aware of what is presbyopia. The community setting in Sekuau promotes living closely as a big family in a long house. Thus any form of information is easily shared by word of mouth or discussion among the house occupants. Approximately 65% of our presbyopic participants did not have corrective spectacle for their near vision impairment. It was evident that knowledge and awareness had little influence in seeking correction ( $p = 0.538$ ). In 2012, a study conducted at multiple rural sites found out that more than 90% of presbyopic populations in rural setting do not have the corrective spectacles compared to 40% of urban setting (He, 2012). Among those who had corrective spectacles, almost 50% seek treatment from doctors, 37.14% from opticians and 14.29% by other methods (which include over-the-counter reading spectacles). Nirmalan *et al* reported that a majority (93%) of people

with presbyopia had obtained their spectacle prescriptions from ophthalmologists, who work primarily in large cities(Nirmalan, 2006).

In our study, the main reasons for not seeking visual aids were lack of felt need and affordability (Table 1). It was similar to the study conducted in South India where lack of felt need and awareness are important barriers reported by people with uncorrected presbyopia (Marmamula, Keeffe, Raman, & Rao, 2011).. The researchers from Tanzania highlighted that many of their participants were not aware that adequate near vision is achievable by accurate correction and even forgotten the value of having good near vision due to gradual progression of near vision impairment (Patel, & West, 2007). A brief interview with the respondents living in the long house highlighted a simple lifestyle in the long house community which commonly involves farming, fishing, small business and selling of handicrafts. The burden of impaired visual acuity is therefore not felt as much compared to those working in a more industrialized or urban setting.

This study had limitations. Firstly, it was not a population-based study and the sample size was small. Secondly, we could not obtain data related to nature of occupation and other risk factors. Moreover, the most of the participants were stay-at-home people and majority was female. If those populations working or employed were included, result might change. Lastly, the study was conducted in a local community of Sibuh, hence the results may or may not be generalized to all other communities.

## **Conclusion**

There is limited knowledge and awareness towards presbyopia in local communities. The main barriers for uptake of refractive services are lack of felt need and affordability. Community awareness regarding benefits of accurate near vision together with refractive services need to be promoted.

### **Acknowledgement**

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# **The practice of exclusive breast-feeding among mothers in the local communities of SibU and its associated factors**

*Nay L., Margareth W. A.Y., Jacklyn L.L.A/P.A., Liau M.C., Nabilah B. A., Eugene L.Y.W., Mohd S.B.M.D*

## **Abstract**

Breast-feeding has been actively encouraged in Malaysia in the last few years in all public hospitals through many awareness campaigns. This study proposes to find out the prevalence of exclusive breast-feeding practice among mothers in the local communities of SibU and its associated factors. The cross-sectional descriptive study was conducted in SibU, Sarawak and with total sample of 120 local mothers who live in long houses and SibU town setting in SibU. Overall prevalence of exclusive breastfeeding (EBF) was found to be 59.1% among the total of 110 mothers. The majority (78.9%) of mothers with a good knowledge (mean score= 7.93) on exclusive breastfeeding (EBF) reflected a positive practice towards exclusive breastfeeding ( $p= 0.036$ ). Younger age groups have higher knowledge scores compare to older age group. Our study also concluded that mothers with good knowledge regarding EBF tend to have a better attitude and most mothers are having good attitude towards Exclusive Breastfeeding (EBF). Majority (69.5%) of the mothers are having positive attitude. The knowledge and attitude of breastfeeding among the mothers were interrelated and most mothers were having good knowledge and attitude towards EBF practice. Hence, more awareness campaigns and education need to be provided for mothers towards proper practice of exclusive breastfeeding.

**Keywords:** Exclusive Breastfeeding (EBF), Knowledge, Attitude and Practice on EBF

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## **Introduction**

Exclusive breastfeeding is an essence for child survival and child health because it provides vital, irreplaceable nutrition for a child's growth and development. Besides that, it serves as a child's first immunization—providing protection from respiratory infections diarrheal disease, and other potentially life-threatening conditions. Exclusive breastfeeding also has a protective effect against obesity and certain non-communicable diseases later in life (Lyell, 2012). To promote practices of exclusive breastfeeding during the first six months of life for the norm of infant feeding remain needed. Globally, only 38% of infants 0 to 6 months old are exclusively breastfed. Recent analyses indicate that suboptimal breastfeeding practices, including non-exclusive breastfeeding, contribute to 11.6% of mortality in children less than 5 years of age. This was equivalent to about 804 000 child deaths in 2011(Black et al., 2013). EBF also benefits mother in contraction of uterus, expulsion of placenta and lower the amount of bleeding. It also lowers the risk of premenopausal breast cancer and ovarian cancer in long term. It is also beneficial in terms of economically and socially as it lowers family food and health expenditures (Child & Programmes, 2011). Among the most important exclusive breastfeeding practices include the initiation of breastfeeding within one hour after birth, frequent and on demand feeding (including night feeds). Infants should be breastfed more frequently during illness and recovery phase. At the age of 6 months, nutritionally adequate and safe complementary foods should be introduced in addition to breastfed infant. Breastfeeding should

be continued until the child is 2 years and above, while he/she is getting nutritious complementary foods (K. L. Tan, 2011). Maternal education, different social class, mothers' comfort, as well as paternal support play a big role in the practice of EBF. Other associated factors such as the attitude of mothers on breastfeeding, maternal occupation, mode and place of delivery are important in the initiation and continuity of breastfeeding practice (Mahmod & Abdullah, 2009). The factors include the community beliefs about mixed feeding, inadequate support from the hospital and healthcare practices and policies on EBF, inadequate skilled support from health facilities and in the community, aggressive marketing promotion of infant formula milk and other breast milk substitutes, lack of maternity work place policies that place a burden for the mothers to breastfeed their infants, and inadequate knowledge of proper breastfeeding techniques and dangers of not exclusively breastfeeding (Lyell, 2012). The significant of Exclusive breastfeeding are recognised universally and this is supported by various researches that were done globally in surveillance of the prevalence of Exclusive Breastfeeding practices and its associated factors. A particular study on this was done by Seid et. Al (2013) in Bahir Dar City, Northwest Ethiopia, it was found that prevalence of exclusive breastfeeding among mothers who delivered 12 months earlier is low. Some of the factors that are found to be significantly associated with Exclusive Breastfeeding (EBF) include having a young infant aged 0-1 month and 2-3, being a housewife, having prenatal EBF plan, delivering at a health facility, giving birth vaginally and having infant feeding counseling. Therefore, providing infant feeding advice during antenatal care, early assistance and

adequate pain relief for women who gave birth by caesarean section are recommended in order to promote the practice of EBF among mothers (Seid, Yesuf, & Koye, 2013).

## Materials & Methods

This study proposes to find out the prevalence of exclusive breast-feeding practice among mothers in the local communities of Sibuh and its associated factors.

The study was conducted in Sibuh, Sarawak and the study population were the people who live in the peri-urban areas of Sibuh. Total sample of 120 local mothers who live in long houses and Sibuh town setting in Sibuh will be selected by simple random sampling. The research instrument of this study was a structured questionnaire consisted of general characteristics, knowledge and practice on exclusive breast-feeding source of information and accessibility to health services.

## Results

	N	Minimum	Maximum	Mean	Std. Deviation
Age	110	16	50	30.47	9.277
No. of Children	110	1	3		
Household income per month	102	250	5000	941.96	690.263
Age of Child	109	1	288	53.02	59.352
Duration of Practice in Months	91	1	12	3.54	2.514

**Table 1: Descriptive Statistics**

		N	%
Ethnic	Malay	5	4.5%
	Melanau	0	0.0%
	Iban	95	86.4%
	Chinese	8	7.3%
	Indian	0	0.0%
	Others	2	1.8%
Religion	Islam	7	6.4%
	Buddha	4	3.6%
	Christian	95	86.4%
	Hindu	0	0.0%
	Others	4	3.6%
Education Status	Illiterate	6	5.5%
	Able to read/ write	0	0.0%
	Primary Level	16	14.5%
	Secondary Level	82	74.5%
	Tertiary Level / University	6	5.5%
Occupation	Government Servant	4	3.6%
	Private Worker	11	10.0%
	Self employed	4	3.6%
	Housewife	88	80.0%
	Unemployed	3	2.7%

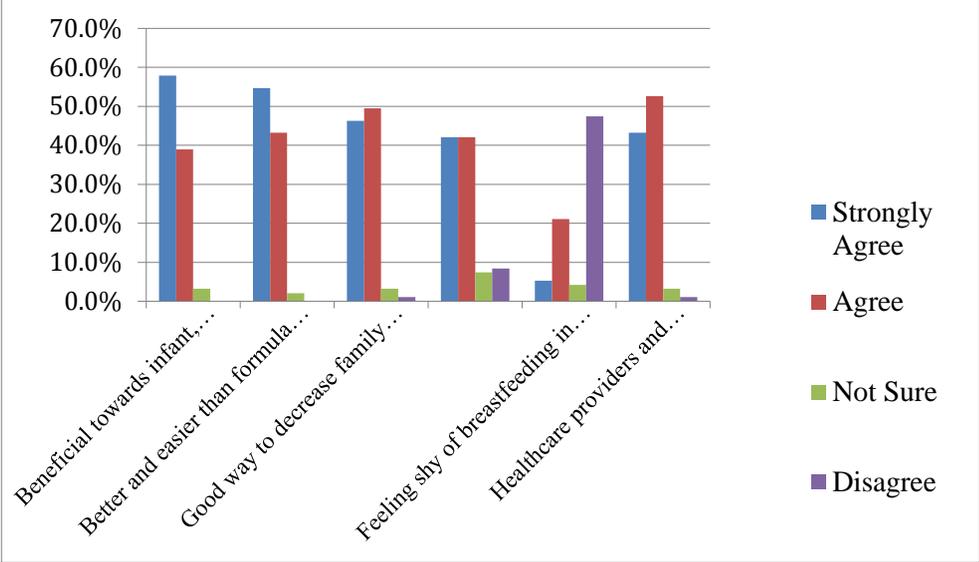
**Table 2: Socio Demographic Characteristics of Respondents**

	N	%
Exclusive breastfeeding (EBF) is defined as the infant receives only breast milk and no other liquids or solids are given including water.	72	75.8%
Exclusive breastfeeding (EBF) is essential in providing adequate nutrition for infant in the first six months of life, no complementary food or water should be given.	68	71.6%
Exclusive breastfeeding (EBF) nurtures mother and baby bonding.	90	94.7%
Exclusive breastfeeding (EBF) reduce neonatal jaundice.	86	90.5%
Exclusive breastfeeding (EBF) decrease diarrhea in infant.	80	84.2%
Exclusive breastfeeding (EBF) benefits in baby growth development.	89	93.7%
Initial breast production of yellow water (colostrums) is nutritionally useless for the baby and should be discarded.	41	43.2%
Exclusive breastfeeding (EBF) also benefits maternal health.	88	92.6%
Breastfeeding practice lowers the risk of pre-menopausal breast cancer and ovarian cancer in long term.	83	87.4%

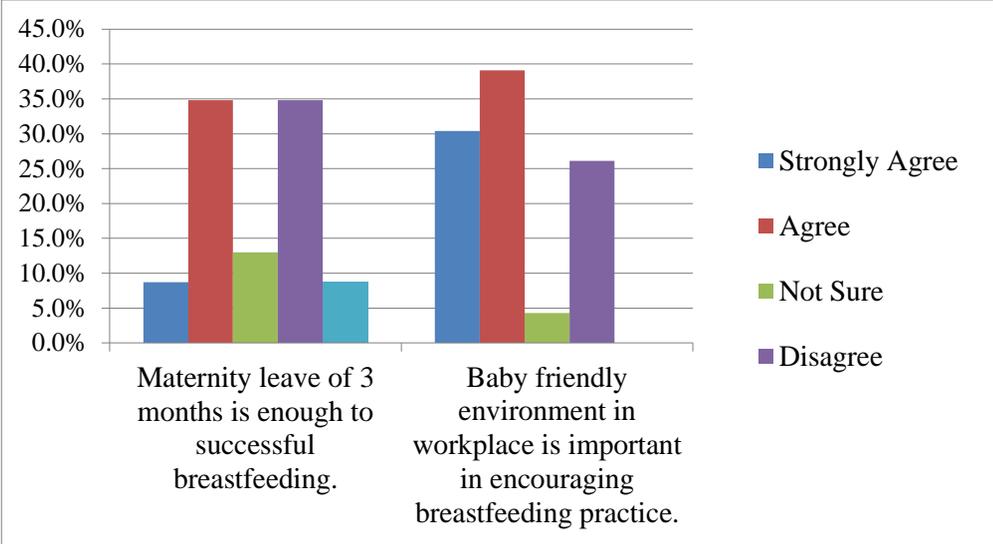
**Table 3: Statement Testing Knowledge of EBF Practice**

The respondents who practice EBF were (59.1%) among respondents. The respondents spent the most duration of practice about 1 month (29.7%) followed by 6 months(26.4%), 3 months(19.8%), 2 months (9.9%) and 4 months(7.7%). The least duration practiced by respondent is 5 months (3.3%) and 12 months (3.3%). Majority of the respondent who practice EBF fed their baby every 2 hours (56.9%), followed by fed whenever the child cries (30.8%), every 4 hours and least is every 6 hours (1.5%). Among who give complement food or drinks in their EBF practice, the main reason is not enough milk production (31.8%) followed by baby do not want the milk (7.3%) and busy with works (6.4%). For working respondents, they are having

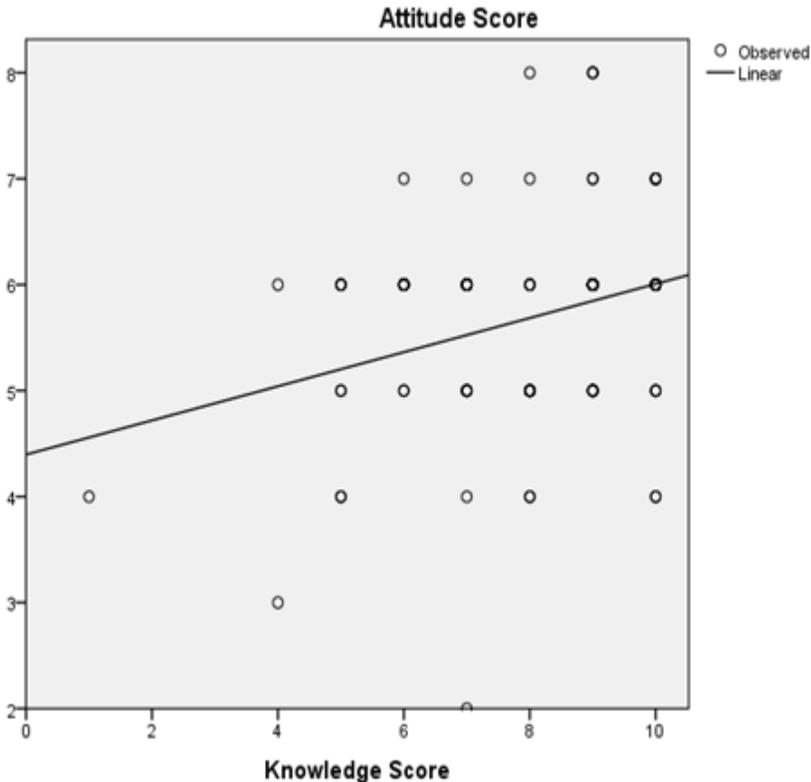
difficulty in practicing EBF in working place (55.0%) and their workplace mostly does not provide designated areas for mothers (90.0%) to breastfeed their child.



**Figure 1. Attitude regarding EBF**



**Figure 2. Attitude regarding EBF for working mothers**



**Figure 3 Association between knowledge score and attitude score**

The graph showed the linear association between knowledge score and attitude score. There is a positive correlation between two variables and is statistically significant ( $R^2 = 0.081$ ,  $p = 0.005$ ). Regression equation is Attitude Score =  $4.397 + 0.161$  Knowledge Score.

### Discussion

In our study, the overall prevalence of exclusive breastfeeding (EBF) was found to be 59.1%. This finding was higher compare to global figure (38%) of infants 0 to 6 months old are exclusively breastfed. Our result was also higher compared to the overall prevalence rate

(43.1%) of exclusive breastfeeding among mothers in peninsular Malaysia. Unlike the cross sectional study above which include large number (712) of sample size which cover both mother-infants pair from urban and rural area in peninsular Malaysia, our study have a relatively smaller sample size (110) and most of the respondent were Iban, lower family income and housewife. Hence, this may lead to overestimation of the prevalence of exclusive breastfeeding of Sibuan population. Furthermore, a long recall period among the respondents may lead to recall bias. Our study also found that majority (67.2%) of mothers initiated breastfeeding within first hour of birth among mothers who practice exclusive breast feeding and most (98.2%) of them gave birth in Government Hospital. This could be due to the implementation of Baby Friendly Hospital Initiative by Ministry of Health Malaysia among all Malaysia hospital since 1992. (5) This is like a local study by Yadav h. (2010) which concluded that although majority of mothers initiated breastfeeding within the first hour of birth but only one fourth of them practicing exclusive breastfeeding. (16) However, his finding was in contrast with an article published by UNICEF (2010) which states that one third initiate breastfeeding within the recommended first hour after birth. Along with this study the identified age group of the mother, area of residence, maternal ethnicity, educational status, occupation, parity, husbands' support for breastfeeding and practice were identified to be independently associated with exclusive breastfeeding. he knowledge and attitude of breastfeeding among the mothers were interrelated and most mothers were having good knowledge and attitude towards EBF practice.

Based on this study there are still many mothers who gave complementary food and water to breastfeeding infant below 6 months. Although many respondents have practiced breastfeeding, some of the respondents do not know the actual definition of exclusive breastfeeding. Hence, more awareness campaigns and education need to be provided for mothers towards proper practice of exclusive breastfeeding.

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# **Knowledge and Attitude towards Breast Cancer and Practise of Self Breast Examination among Females Population in Rural Sibü**

*Nay L., Margareth W.A.Y., Kavitha G., Muhammad A. A., Shareen, Tan .L.F.*

## **Abstract**

Breast cancer is one of the leading causes of cancer morbidity and mortality worldwide. In Sarawak, breast cancer is second leading cancer which is 9.08 %. The documenting women's knowledge and attitude towards breast cancer and practice of breast self-exam (BSE) would be useful in the design of interventions aimed at reducing breast cancer. A cross-sectional survey was conducted in a volunteer sample of 100 consenting women in Machan Long House in Sibü, Sarawak to determine the prevalence of breast cancer and practice of BSE among female rural population and the knowledge and attitude of breast cancer among female rural population in Sibü, Sarawak. The study showed the prevalence of breast cancer among family members and friends were 26% whereas the prevalence of perform breast self-examination more than half of rural population (58%) in Sibü. The female rural population in Sibü fairly educated with close to three quarters (67%) and more than half of participants (55%) had previously heard about BSE, however as many as 42% had never done a BSE. Participants with higher knowledge scores had better attitude score towards breast cancer. There was no significant association on practice of BSE between nulliparous and multiparous women.

**Keywords:** Breast Self-Exam (BSE), Knowledge, Attitude and Practice on BSE

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## **Introduction**

In Malaysia, the incidence of cancer increased from 32,000 new cases in 2008 to about 37,000 in 2012. Mortality due to cancer stood at 20,100 deaths in 2008 and has increased to 21,700 deaths in 2012 (Har Yip, Mohd Taib, & Mohamed, 2005). The Sarawak State Health Department showed that the second commonest cancers in government hospitals Sarawak 2008 is breast cancer among Sarawak population (“Official Website : Sarawak Health Department - Sihat Sepanjang Hayat,” n.d.). With breast cancer being the most common cancer and leading cause of death among women in Malaysia, Hadi et al carried out a research to assess the knowledge on breast cancer among female university students from 10 randomly selected faculties and their perception towards the disease treatment outcomes. He concluded that many of students limited knowledge on risk factors and sign and symptoms of breast cancer. Breast cancer awareness campaign should be organized regularly for early detection of breast cancer (Hadi, Hassali, Shafie, & Awaisu, 2010).

Breast self-examination (BSE) has been recognized as the only realistic approach in early finding of breast cancer in developing nations. Seeing the impending of BSE, there is an immense need for a public health education program to train the practice of breast self-examination among women to minimize the fear, denial, myths and misconceptions (Rakkapao, Promthet, Moore, Solikhah, & Hurst, 2017) . Breast self-examination and clinical breast examination influenced the practice of mammogram screening among female doctors. Furthermore, self-awareness among the doctors contributes to

the awareness towards their patients(Al-Naggar, Isa, Shah, Chen, & Kadir, 2009).

Women irrespective of their educational level, have insufficient knowledge about breast cancer risk factors and under exploit screening services for breast cancer. They also identified barriers encountered by the women towards clinical breast examination, were being examined by male physicians followed by inadequate specialized health facilities and lack of female physicians. Younger females believed that clinical breast examination is only indicated for older female (Amin, Al Mulhim, & Al Meqihwi, 2009).

Increase awareness and improve screening for preventing breast cancer and increase awareness by documenting women's knowledge on breast cancer and BSE as well as their practice of BSE. Therefore, we conduct a study in Sibu to know the women awareness on the risk factor, prevention and causes of breast cancer. Besides that, we can assess their impression on the practice of BSE.

## **Materials & Methods**

Cross-sectional Study was carried out among females of 15 age and above living in the rural areas of Sibu, Sarawak during March 2015. Total of 100 participants who consented and willing to fill a self-administered questionnaire were interviewed. The self-administered questionnaire is consisting of 4 sections: section 1 is socio-demographic characteristics included 6 questions (age, race, marital status, education qualification, monthly income and residency), section 2 is about the general knowledge and perception about the

breast cancer, session 3 consist of attitude towards breast cancer and the last session consist of practice of BSE.

## **Results**

Only 71% of the women have heard about Breast Cancer. 26% of women have known friends or family members suffering from this disease. The most frequent perceived cause or risk factors of breast cancer were smoking and strong family history of breast cancer (34%). Prolonged usage of prescribed drugs was at 23%, followed by usage of illicit drugs at 22%, alcohol consumption at 16%, contraception at 14%, exposure to radiation at 11%. 9% attributed witchcraft as a cause of the disease. 43% of the participants believed that breast cancer could not be prevented and 55% of respondents said that the disease can be treated. 85% of them agreed or strongly agreed breast cancer patients should be provided with support and homecare by the community.

For BSE practice among respondents, 42% haven't performed BSE before. Of the 42 respondents that have not performed BSE, 13 claimed it was inconvenient, 7 of them said it was not necessary, 8 of them said they were too busy and others make 15%. Of the 58 participants that performed BSE, 15 of them did BSE less than a week ago while 11 of them performed it less than 3-6 months ago. 14 respondents did BSE less than one year and 18 last did BSE more than a year ago.

There was a significant association between race and knowledge towards breast cancer ( $p=0.03$ ) but there was no significant

association between race, attitude towards breast cancer ( $p=0.70$ ) and practice of breast self-examination ( $p=0.48$ ). The Iban and other races respondents are knowledgeable about breast cancer. There was a strong significant association between occupation and knowledge towards breast cancer ( $p < 0.01$ ) but there was no significant association between occupation, attitude ( $p=0.32$ ) and practice of BSE ( $p=0.07$ ).

Education background of respondents influence on their knowledge ( $p < 0.001$ ) and attitude ( $p 0.04$ ) about breast cancer but no evidence of significant association on BSE practice ( $p 0.12$ ).

Family income also effect on their knowledge level, attitude and practices on BSE ( $p < 0.01$ ). The association were positive correlation between knowledge ( $r=0.424$ ), attitude towards breast cancer ( $r= 0.078$ ) and practice of breast self-examination ( $r=0.394$ ).

## **Discussion**

In conclusion, women of Machan Longhouse showed a significant association between knowledge and attitude towards Breast Cancer, but it does not reflect towards the practice of Breast Self-Examination (BSE) among them. Although the knowledge of Breast Cancer and BSE is moderately good among these younger age group of Iban housewives with some education background and a better monthly income, only the women who are educated with a better monthly income has a positive correlation between the knowledge and attitude towards the disease and Breast Self-Examination. The only group that has better practice towards BSE are women of the elderly age but with

less knowledge of the disease. The younger generation that have better knowledge and attitude do not practice regular BSE for many different reasons. Therefore, women of Machan Longhouse need to be educated more on the importance of practicing regular BSE to allow early detection of any lumps and prevention of Breast Cancer in future. Further studies need to explore what interventions could be best used to improve practice of BSE.

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