TRIANGULATED RELATIONSHIP BETWEEN GENDER, VULNERABILITY AND POVERTY AMONG THE VULNERABLE FISHERIES COMMUNITY MEMBER IN PENINSULAR MALAYSIA

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Abstract

This paper aims to profile the backgrounds of the respondents by sex disaggregated, to measure the relationship between two levels of vulnerability and the sex of the respondents, to correlate between two levels of vulnerability, two levels of household financial wellbeing (HFW) and the sex of the vulnerable respondents in freshwater fisheries communities in Peninsular Malaysia. The vulnerable respondents in this paper were sampled through multi-level random sampling. The study locations were Pekan Pahang, Padang Terap Kedah, Lenggong Perak, and Kuala Pilah Negeri Sembilan, which had been sampled to represent the Eastern, Northern, Middle, and Southern Zones of Peninsular Malaysia. With the assistance of the Penghulu (sub-district leader) and the Department of Fisheries in each district, ten villages with freshwater fisheries economic activities were identified and sampled. Fifty male and fifty female vulnerable respondents were sampled in each district with 400 respondents in total reporting. The questionnaire listed seven vulnerability types. On average, the vulnerable respondents in this paper were older people and mostly older single mothers. The majority of the women were older single mothers, less educated, and poorer than men. A significant (p<0.05) relationship was obtained between two levels of vulnerability and the sex of the respondent. Thus, $H_0$1 was rejected. The statistics demonstrate that women were more vulnerable than men because the majority (57.35%) of the female respondents were in the highly vulnerable category while the majority (64.3%) of the male respondents were in the low vulnerable category. Among the respondents, a significant (p<0.05) correlation was obtained through the Chi Square test between sex, two levels of vulnerability, and two levels of HFW. Thus, $H_0$2 was rejected. This paper concludes that there is a relationship between sex, two levels of vulnerability, and two levels of HFW; and that vulnerable women are more vulnerable and poorer than vulnerable men. This paper recommends that poverty eradication programmes should be sensitive to gender and the type of vulnerability which the focus should be given to older single mothers in freshwater fisheries communities.

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Keywords: Freshwater fisheries community; Household financial wellbeing; Poverty; Gender; Vulnerability

Abstrak

Artikel ini bertujuan untuk memprofil latarbelakang responden menurut sex, untuk mengukur hubungan antara dua tahap kerentanan dan sex responden, untuk mengukur korelasi antara dua tahap kerentanan, dua tahap kesejahteraan kewangan isi rumah (HFW) dan sex responden rentan di dalam komuniti nelayan air tawar di Semenanjung Malaysia. Responden rentan dalam artikel ini disampel melalui kaedah persampelan rawak pelbagai tahap. Lokasi kajian adalah Pekan Pahang, Padang Terap Kedah, Lenggong Perak, dan Kuala Pilah Negeri Sembilan, yang masing-masing disampel untuk mewakili Zon Timur, Utara, Tengah dan Selatan di Semenanjung Malaysia. Dengan bantuan daripada Penghulu (pemimpin peringkat mukim) dan Jabatan Perikanan di setiap daerah, sepuluh kampung dengan aktiviti ekonominya adalah perikanann air tawar dikenalpasti dan disampel. Lima puluh lelaki dan lima puluh responden perempuan rentan dalam setiap daerah disampel dengan jumlah 400 orang responden yang dilaporkan.Tujuh jenis kerentanan disenaraikan dalam soal selidik. Secara purata responden dalam kajian ini adalah warga emas yang kebanyakannya adalah ibu tunggal tua. Majoriti perempuan adalah ibu tunggal tua, kurang berpendidikan, dan lebih miskin daripada lelaki. Dapatan menunjukkan hubungan signifikan ($p<0.05$) antara dua tahap kerentanan dan sex responden. Oleh itu, Ho1 ditolak. Statistik menunjukkan bahawa wanita lebih rentan daripada lelaki kerana majoriti (57.35%) daripada responden perempuan rentan adalah dalam kategori sangat rentan, sementara itu majoriti (64.3%) daripada responden lelaki rentan adalah dalam kategori kurang rentan. Dalam kalangan responden, korelasi signfikan ($p<0.05$) diperolehi melalui ujian Chi Square antara sex, dua tahap kerentanan, dan dua tahap HFW. Maka dengan itu, Ho2 ditolak. Artikel ini menyimpulkan, ada hubungan antara sex, dua tahap kerentanan dan dua tahap HFW; dan dengan itu wanita rentan adalah lebih rentan dan miskin daripada lelaki rentan. Artikel ini mencadangkan program pembasmian kemiskinan perlu sensitif kepada gender dan jenis kerentanan dengan fokus perlu diberikan kepada ibu tunggal tua dalam komuniti nelayan air tawar.

Kata kunci: Komuniti nelayan air tawar; Kesejahteraan kewangan isi rumah; Kemiskinan; Gender; Kerentanan

Introduction

The fisheries and aquaculture economic sector (FAES) is a crucial sector that provides healthy protein for national food security (Hawkes & Ruel, 2012) and a source of income and food for poor members in the fisheries communities (Martin, Lorenzen & Bunnefeld, 2013). In Malaysia's National Agrofood Policy (DAN) (2011-

2020) (FAMA, 2020), aquaculture is one of the key areas for ensuring fish-based protein for national food security because of the decrease in the size of the catch of fish products. Aquaculture activities may encourage fish production, especially in freshwater FAES because it offers inexpensive fish products to Malaysian consumers.

In addition to producing fish products for national food security, FAES provides a place to work for many people, including the vulnerable members in the community, the fisheries community members with low academic backgrounds, and women because there are many indirect sectors in relation to FAES, such as in fish-based food processing and ecotourism activities. Even though some FAES products, especially from brackish water, are considered expensive in Malaysia (Unnib Abdullah, 2020), many members of fisheries communities are poor (Stanford, Wirayawan, Bengen, Febriamasyah, & Haluan, 2013). This is particularly evidenced among women and vulnerable groups who are usually subject to poverty in rural areas (EPU, 2015).

Some of the reasons for poverty among women and the vulnerable groups in fisheries communities are poor involvement in FAES because the activities are too masculine (Satapornvanit, 2018), no capital to run a business because they are poor (EPU, 2015), and no knowledge and experience to market the enterprise products because they are usually associated with low academic background (Zainalaludin, 2012). Consequently, they may be marginalized and lose the opportunity to earn an income in FAES (Biswas, 2017).

In fisheries communities, women, older people and children are already categorised as vulnerable community members (Bird & Rieker, 2008). They are usually poor because of their inability to be directly or indirectly involved in FAES. Although women and men are different biologically and physically, they should have equal chances in education opportunities, health services, and economic activities (Sustainable Development Goal (SDG) 5) (United Nations, 2018), and many studies show gender inequity in many poor rural areas (World Economic Forum, 2019). Although the women are usually the vulnerable group, particularly the older women and poor single mothers with many dependents, no specific studies show the correlation between the level of vulnerability, sex, and the household financial wellbeing (HFW). As these are essential in order to achieve the Sustainable Development Goal (SDG) 1 – no poverty) (United Nations, 2018). This paper aims to answer the following research questions:-

i) What is the profile of the respondents' backgrounds?
ii) What are the distributions of the respondents by vulnerability type and sex disaggregated?

iii) Is there any relationship between the levels of vulnerability and the sex of the respondents?
iv) Is there any correlation between the two levels of vulnerability, two levels of HFW, and the sex of the respondents?

The objectives of this paper are as follows:

i) To profile the respondents' backgrounds by sex disaggregated.
ii) To identify the distribution of the respondents by vulnerability type and sex disaggregated.
iii) To measure the relationship between the two levels of vulnerability and the sex of the respondents
iv) To correlate between the two levels of vulnerability, two levels of HFW, and the sex of the respondents.

Alternate hypotheses

Ha1: There is a relationship between the two levels of vulnerability and the sex of the respondents,

Ha2: There is a correlation between the two levels of vulnerability and the two levels of HFW, and the sex of the respondents

Literature Review

Masculine economic sector

According to the Gender Schema Theory (Bem, 1981), women are associated with femininity and men are associated with masculinity. The masculine economic sector involves hard and high work risk, such as FAES and is only suitable for men. Thus, the vulnerable women become very feminine due to their disability in which more feminine than able body women. They will face a major hurdle to earn income in FAES, because of the masculinity of this economic sector. The life expectancy of women is longer than that for men (DoSM, 2019), which leads to more older women than older men in any community. Furthermore, older individuals are prone to diseases (Chanjuan Zhao, Wong, Zhu, & Yang, 2018) which may cause them to be highly vulnerable and marginalised in a masculine economic sector because they may suffer many vulnerability types (VuT). For instance, they are women, older, single mothers, and suffering many diseases. In FAES the vulnerable groups are easily marginalised and poor because their ability to work is associated with the feminine capacity.

Vulnerability type

According to the National Wellness Institute (1976), there are six types of wellness dimension: physical, social, intellectual, spiritual, emotional, and occupational. Opposite to wellbeing is vulnerability, which can be deduced from these six wellness dimensions (Table 1). For example, the handicapped, older person, child labour, and serious disease VuT can be deduced from physical wellness (Zainalaludin *et al*., 2017). This paper observes VuT through the lenses of household financial wellbeing (HFW), which is the VuT that may reduce someone's ability to work. From Table 1, seven VuTs are identified, which are handicapped, older person, serious disease, child labour, single parents, living alone, and caretaker.

Table 1: Vulnerability Type from Wellness Dimension (National Wellness Institute, 1976)

Wellness dimension	Vulnerability Type
Physical	handicapped, older person, serious disease, child labour
Social	handicapped, older person, single parent, child labour, living alone, care taker
Intellectual Spiritual	older person, child labour, older person child labour
Emotional	handicapped, older person, single parent child labour, living alone, caretaker
Occupational	handicapped, older person, single parent, child labour, living alone, caretaker, serious disease

The Handicapped VuT refers to individuals who suffer physical or mental disability but can still work at a very minimum capacity (WHO, 1980). The Single Parent VuT may be due to the death of a spouse or divorce leaving behind single mothers or single fathers (Lu *et al*., 2019). The Older Person VuT refers to individuals aged 60 years old and above (United Nation, 2008). The Serious Disease VuT refers to someone who suffers with a disease that may limit their capacity to work, such as cancer, hypertension, stroke, heart disease, diabetes, arthritis, asthma, or kidney disease (Christian & Alisha, 2017). The Living Alone VuT is someone who lives alone without family members (De Vaus & Qu, 2015) and is usually associated with poverty (Piekut, 2020). The Caretaker VuT refers to individuals who are taking care of family members who are older, bedridden, children or mentally retarded (Sullivan & Miller, 2015) and is strongly associated with women (Ruiz, 2018). The Child Labour VuT refers to children under the age of 18 years old and working in FAES to earn an income for living (Che Rose, Sarirah, Abdul Aziz & Norain, 2004).

There are pockets of poverty in rural Malaysia (Bene & Friend, 2011). The poverty may be due to the VuT that they suffer, which causes them to be unemployed (McQuaid & Lindsay, 2005). For instance, a handicapped individual is perceived as having low ability to do certain types of work, especially in the masculine FAES. Women are usually associated with low ability to work in FAES, and found to be poorer than men in rural communities (DoSM, 2018). One of the reasons is because rural women are usually housewives with no income. They cannot work because they are taking care of children, or older or bedridden family members (Ehrlich, Möhring & Drobnič, 2019). A poor housewife usually worries about her financial security when she is older age or if her partner passes away or divorces her. In the long term, having financial worries may affect one's wellness (Timmons, Gooberman, & Sharp, 2013) because they may fall sick worrying how to earn an income, and, at the same time, they may have other restrictions affecting their ability to work. In the long run, someone with many diseases may also limit their ability to work, particularly for women as women live longer than men (DoSM, 2019; DoSM, 2018).

Vulnerability and poverty by sex disaggregated

Gender, poverty, and vulnerability are triangulated factors, which are always associated with the poor wellbeing of an individual (Zainalaludin, Shukor, & Saidi, 2017). A vulnerable individual is defined as a marginalized community member who is exposed to high poverty risk (Zainalaludin *et al*., 2017). The vulnerability is the opposite of normality, as cited in the Intergovernmental Panel on Climate Change by McCarthy, Canziani, Leary, Dokken, and White (2001). What a normal individual can do may not be similar to what a vulnerable individual can do. Therefore, vulnerability concerns the risk of not being capable of being able to do something to earn an income (Zainalaludin *et al*., 2017; McQuaid & Lindsay, 2005), which, in this paper, refers to working directly or indirectly in FAES. Therefore, a vulnerable individual is usually associated with poor financial wellbeing (Baiyegunhi & Fraser, 2011).

Vulnerable household financial wellbeing

This paper conceptualized a vulnerable household as a poor household with at least one household member suffering from at least one VuT. Only one respondent is taken from one vulnerable household. Even though FAES is a masculine economic sector (Satapornvanit, 2018), there are vulnerable people who are involved in the indirect sectors associated with FAES, such as eco-tourism as homestay operators, fish-based food processing entrepreneur, and restaurant operators (Hussin, Kunjuraman, & Weiroski, 2015). They are the empowered group with capital to venture into business. In other words, the vulnerable individual can be empowered economically in FAES through various indirect economic sectors by providing capital and proper knowledge in running a business. The right policy and programme are essential to help vulnerable people out of abject poverty.

According to Joo (2008), financial wellbeing refers to a stage of being happy, healthy, and free from worry about one's financial situation. When a breadwinner of a household is injured or unable to work due to an accident, disease, or disability, these households may suffer high poverty risk (Novignon, 2010). Males and females cope with stress in different ways (Simon 2014). For instance the female headed households are usually associated with vulnerable households and they are also associated with financial stress (Mohd Hashim, Azmawati, & Endut, 2015).

Financial wellbeing is related to material and non-material satisfaction, financial stabilization, and financial adequacy (Ramli, 2011); as well as the feeling of being happy and not having to worry about financial problems to live (Joe, 2008). Financial wellbeing is always measured by the individual's overall satisfaction with their financial situation (Van Praag, Frijters, & Ferrer-i-Carbonel, 2003). There are four domains of financial wellbeing, namely, buying behaviours, perception of current finances, perception of the financial future, and attitudes towards long-term care insurance (Malone, Stewart, Wilson, & Korsching, 2010). The financial behaviour is the way an individual makes financial decisions (Madrian & Shea, 2011) and their attitude to controlling financial consumption (Ramli, 2011). Good behaviour in terms of financial management may lead to financial satisfaction (Xiao, Tang, & Shim, 2009), which, in turn, may help someone live happily.

Gender Schema Theory

According to Bem (1981), the Gender Schema Theory is a cognitive theory to explain how gender-related characteristics are learnt from generation to generation and become gender stereotypes. For example, women have to cook, and men have to work and earn an income are gender stereotypes. Men and women have no choice, they have to do their gender roles in order to be accepted in the society (Danes & Haberman, 2007). Anybody against the gender stereotype may not be accepted in his/her community. The Gender Schema Theory proposes the concept of masculinity and femininity (Bem, 1981) in which masculine is related to hard work and men whereas femininity is related to less hard work and women. In a masculine FAES, single mothers and older people are not accepted by the society to work directly in FAES even though they are poor and have no other sources of income. The society may let them work in the indirect sectors of FAES, such as fish-based food enterprises but poor single mothers and older people may not have sufficient capital to venture into business.

Adult men and women convey the gender roles to their children (Bem, 1981), and, eventually, these are accepted by boys and girls as their gender role as men and women in the future (Martin, Ruble, & Szkrybalo, 2002). Based on the Gender Schema Theory, it is hard for women to earn an income in FAES, and, thus, women may be poorer than men, especially women who are suffering VuT(s). For example,

single mothers, older women, or those suffering diseases, staying alone, or handicapped. Women live longer than men (DoSM, 2019; DoSM, 2018), hence, if they are vulnerable, they may experience a high level of vulnerability.

Methodology

Vulnerable people who earn an income from any activities associated with FAES are respondents in this paper. The vulnerable individual refers to someone who suffers at least one VuT from the seven VuTs listed in the questionnaire, namely, Handicapped, Single Parent, Older Person, Serious Disease, Living Alone, Child Labour, and Other VuT, which were deduced from the wellness dimension (Table 1). This paper uses an exploratory and correlational research design. The background of this paper is the vulnerable freshwater fisheries community members in Peninsular Malaysia.

The respondents were sampled through the multi-level random sampling method. Peninsular Malaysia was firstly divided into four zones – Northern Zone, Eastern Zone, Middle Zone, and Southern Zone. In the first level, one state from each zone of Peninsular Malaysia was randomly sampled through simple random sampling – Northern Zone (Kedah State was randomly selected From Kedah, Penang, and Perlis), Eastern Zone (Pahang State was randomly selected from Pahang, Terengganu, and Kelantan), Middle Zone (Perak State was randomly selected from Perak, Selangor, and Federal States) and Southern Zone (Negeri Sembilan State was randomly selected from Negeri Sembilan, Melaka, and Johor). Four districts were then sampled, which were Pekan District in Pahang State, Kuala Pilah District in Negeri Sembilan State, Lenggong District in Perak State, and Padang Terap District in Kedah State through the recommendation from the Department of Fisheries (DOF) office in the respective state with the presence of freshwater fisheries communities in those districts.

In order to determine the number for the sample, the population was firstly defined. The total population in the four sampled districts was equal to 44, 313 of fishermen and aquaculture operators (DOF, 2019). On the average of four to six person per household (Zainudin, Zein, & Luqman, 2019; Asok, 2016), 270, 000 members of fisheries community obtained and 10 percent were assumed to be the vulnerable people population (N=27,000) as according to Osman, Bakri, Bachok, Ibrahim, and Mohamed (2015). According to the Krejcie and Morgan Table (1970) for N=27,000, the sample size is n=357 numbers of respondents. Thus, n=400 was used as the total number of the sample in this paper. The community leader in each district helped in identifying the 400 VCM respondents. The sample size=400 was divided equally with 100 respondents in each district, which consisted of 50 male respondents and 50 female respondents (Table 2).

Table 2: Sampling Table

Zone	District	Male	Female	Total
Eastern	Pekan	50	50	100
Southern	Kuala Pilah	50	50	100
Middle	Lenggong	50	50	100
Northern	Padang Terap	50	50	100
Total				400

A special questionnaire was developed and consisted of three parts, which were background of respondents, background of VuT, and Malaysian Personal Household Wellbeing (MPHFW) by Jariah (2007). According to Joo and Grable (2004), the socioeconomic background, such as gender, age, race, and income, may influence an individual's perception about their financial satisfaction. The Malaysian Financial Wellbeing Scale (MFWBS) developed by Jariah (2007) was based on the adaption of the In-charge Financial Distress/Financial Wellbeing (IFDFW) by Prawitz, Garmen, Sorhaindo, O'Neill, Kim, & Drentea (2006). The MFWBS was measured through two domains, namely, financial wellbeing and financial behaviour (Prawitz *et al*., 2006). A pilot test obtained a Cronbach's Alpha of 0.834 for HFW through MPFWBS (Jariah, 2007) on 30 respondents. A Cronbach's Alpha > 0.7 is accepted for social studies (George & Mallery, 2003). The questionnaire was validated by an expert in the field.

This paper tested the null hypotheses due to the requirement of the Chi Square test used. Two null hypotheses were tested in this paper, namely, $H_0$1: There is no relationship between the levels of vulnerability and the sex of the respondents. The low vulnerability level is respondents who suffer one VuT and the high vulnerability level is respondents who suffer two to six VuTs. The sex of the respondent is either male or female. $H_0$2: There is no relationship between the levels of vulnerability and the HFW by sex disaggregated. The two levels of HFW are a low HFW is where the score of HFWS is less than 50 and the high HFW is where the score of HFWS is 50 and above. The maximum score is 100, thus a score of 50 is used as the cut of point.

The data were collected through 400 sets of questionnaires, which were distributed from July to September 2018. The questionnaires were first distributed in the Eastern Zone (Pekan), then the Southern Zone (Kuala Pilah), Northern Zone (Padang Terap), and, finally, in the Middle Zone (Lenggong). In each study location, the respective DOF Office, District Office, the sub-district leader (*Penghulu)*, and the village leader (*Ketua Kampung*) were involved in assisting and identifying the vulnerable respondents. The SPSS were used to analyse the data. The descriptive statistics through frequency, percentage, mean, and standard deviation were used to explain the findings concerning the background of the respondents. The Chi Square was used to test the $H_0$2.

Findings and Discussion

Respondents' backgrounds

A total of 400 respondents are reported in this paper. These consist of 49.5% male and 50.5% female (Table 3); they also represent 400 vulnerable households. Table 3 shows the distributions of the respondents by seven socio-economic backgrounds: age, ethnic, marital status, academic background, household head status, house ownership, and respondent's monthly income. In terms of ethnicity, a high majority (94.75%) of the respondents who participated in this study are Malay followed by Cambodian (5%) and Indian (0.25%). There were no Chinese respondents, which is likely due to the fact that rural Malaysia is mainly occupied by Malays (Tham, 1982), and that the Malays are dominant in the FAES in Peninsular Malaysia (DOF, 2018). Among the Malay respondents the majority (50.4%) are male, while among the Cambodian respondents the majority (65.0%) are female. The Cambodian refugees used to be given political asylum by the Malaysian Government under Tun Razak in the early 1970s (Siti, 2014) and are located at various places, one of which is Pekan, Pahang, where the FAES constitutes the major economic activity.

Table 3: Respondents' Background Profile (*n*=400)

Backgrounds	Male	Female	Total	
	***n* (%)**	***n* (%)**	***n***	**%**
Race				
Malay	191 (50.4)	188 (49.6)	379	94.8
Indian	-	1 (100.0)	1	0.2
Other (Cambodia)	7 (35.0)	13 (65.0)	20	5.0
Marital Status				
Single	32 (19.6)	131 (80.4)	163	40.8
Married	166 (70.0)	71 (30.0)	237	59.2
Academic Background				
Primary and lower	107 (45.7)	127 (54.3)	234	58.5
Secondary and higher	91 (54.8)	75 (45.2)	166	41.5
Head of Household				
Yes	189 (60.4)	124 (39.6)	313	78.3
No	9 (10.3)	78 (89.7)	87	21.7
House Ownership				
Yes	152 (51.4)	144 (48.6)	296	74.0
No	46 (44.2)	58 (55.8)	104	26.0
Total n (%)	198 (49.5)	202 (50.5)	400	100

Table 3 (continues)

	Mean	SD	Mean	SD
Age	62.7	13.5	**63.5**	13.4
Respondents' Income (RM)	**1294.0**	929.2	621.9	782.3

Note: SD= Standard Deviation

A high majority (70.04%) of the male respondents are married and the high majority (80.37%) of the female respondents are single – divorced, widowed, or not married (Table 3). The marital status has an impact on the emotional wellbeing because of the negative stigma of the society towards unmarried, separated, divorced, or widowed individuals (Rusyda, Lukman, Subhi, Chong, Abdul Latiff, Hasrul, & Wan Amizah, 2011). The high majority of women are single mothers due to divorce or the death of their spouse, or not married. The status of single mother may reduce the level of confidence of a woman to work in the public sphere and earn an income for her household. According to Chikezie and Sabri (2017), single mothers always have poorer financial wellbeing compared to married women (Economic Planning Unit, 2017).

The majority (54.3%) of female respondents only had primary school and lower in terms of their academic background, while the majority (54.8%) of the male respondents had secondary level and higher as their academic background. In terms of these findings concerning sex and academic background it may be concluded that the male respondents are more educated than the female respondents in fisheries communities. In many rural studies, female respondents are always reported as having a lower academic background than the male respondents (Hussin, Kunjuraman, & Weirowski, 2015; Hussin *et al*., 2015; Zainalaludin, 2010). On the other hand, even when the women are educated, they still face socioeconomic hardship, such as low conceptual awareness and sexual harassment in their working life (Abdullahi, Zainalaludin, & Paim, 2013).

The majority (60.4%) of the male respondents are the head of the household in this paper, compared to only 39.6% of the female respondents (Table 3). This is quite normal, in that the husband is usually the household head and involved in making important household decisions (Kleiber, Harris, & Vincent, 2015). If a woman is a household head, she may have lost her husband due to the death of her husband or divorce.

House ownership is important for social security (Scanlon & Page-Adams, 2001), especially for women. The majority (60.4%) of the male respondents had house ownership compared to only 39.6 percent of the female respondents. Obviously, this is because the husband usually has the income and is the one who decides to buy the house (Kleiber *et al*., 2015); thus, the ownership of the house is in his name.

The female respondents mean age=63.5 years old (SD=13.43) (Table 3), which was higher than that of the male respondents who had a mean age=62.7 years old (SD=13.51). The respondents in this paper are on average older persons because 60 years old and above is considered old age (United Nation, 2017). Older persons are prone to disease and disability, especially women (Zhao, Wong, Zhu, & Yang, 2018).

The respondents mean monthly income=RM1294.0 (SD=RM929.2) for male respondents, which is almost double that of the female mean monthly income=RM621.9 (SD=RM782.3) (Table 3). Women tend to have lower monthly incomes as compared to males because they usually have a low academic background (Zainalaludin, 2012), and, therefore, only acquire low pay in the job market. Moreover, FAES is a masculine sector (Satapornvanit, 2018), which is not considered to be suitable for females. Masculine workers in FAES are essential due to the hard work and masculine job scope, and women usually face great discrimination in securing equal payment with men in this masculine sector (Elliott, 2002).

Relationship between vulnerability level and the sex of the respondent

The RO-2 aims to measure the relationship between two levels of vulnerability and the sex of the respondents. The *n*=126 respondents suffer one VuT and are classified as being in the low vulnerable category, while *n*=274 respondents suffer two to six VuTs and are classified in the highly vulnerable category (Zainalaludin *et al.,* 2017). The low vulnerable category consists of *n*=81 (64.3%) male and *n*=45 (35.7%) female respondents, while the highly vulnerable category consists of *n*=117 (42.7%) male and *n*=157 (57.3%) female respondents (Table 4). In total, of the 68.5% respondents in the highly vulnerable category, 57.3 percent are female, and 42.7 percent are male. The majority of males (64.3%) are in the low vulnerable category (Table 4).

Table 4: Levels of Vulnerability by Sex Disaggregated (*n*=400)

Vulnerability Level	Male		Female		Total	
	n	**%**	***n***	**%**	***n***	**%**
Low Vulnerable	81	**64.3**	45	35.7	126	31.5
High Vulnerable	117	42.7	157	**57.3**	274	68.5
						100.00

*Note: $p<0.05$

More male than female vulnerable respondents are in the low vulnerable category, and more female than male vulnerable respondents are in the highly vulnerable category. Using the Chi-square test, there is a significant ($p<0.05$) relationship between the two levels of vulnerability and the sex of the respondents; thus $H_0 1$: There is no relationship between the two levels of vulnerability and the sex of the

respondents, is rejected. This paper concludes that there is a significant relationship between the level of vulnerability and the sex of the respondents. According to DoSM (2017), Hussin *et al*. (2015), and Sultana (2006), women tend to be more vulnerable for many reasons. For example, a woman's life expectancy is more than that for a man in Malaysia (DoSM, 2019; DoSM, 2018), they generally live in rural areas, have low academic background, and they are prone to stress, which may cause them to suffer many diseases, especially as they get older. These findings also support previous studies (DoSM, 017; Zumilah *et al*., 2017; Zainalaludin 2012) that rural women are poorer than rural men because the number of VuT they suffer may increase the risk of poverty.

Correlation between the levels of vulnerability and the level of household financial wellbeing by sex disaggregated

This sub-topic discusses the findings for RO3: to correlate between the two levels of vulnerability and the two levels of HFW by sex disaggregated. The $H_0 2$: there is no correlation between the two levels of vulnerability and the two levels of HFW by sex disaggregated, was tested. The total HFW score=100, thus HFW score=50 is used as the cut-off point between the two levels of HFW, which were the bottom and upper score. The upper level may be associated with a lower poverty risk or higher HFW than the bottom level for which the HFW score $\geq$50. The bottom level may be associated with a high poverty risk and very low HFW for which the HFW score $<$50. Generally, fisheries community members are associated with poverty (Béné, & Friend (2011), and often comprise the vulnerable members. The mean of HFW score = 5.06 (out of a maximum score of 10) in this paper generally indicates low HFW. The Person Chi Square statistic obtained significant correlation (p<0.05) between the two levels of vulnerability and the two levels of HFW by sex disaggregated. Thus, $H_0 2$ is rejected.

Table 5 demonstrates the worst category of respondents, which is respondents in the low level of vulnerability as well as low level of HFW. Table 5 only shows 23.2 percent vulnerable male respondents in this category, which is only about half that of the female vulnerable respondents (40.10%). Obviously, these statistics show that vulnerable women are poorer than vulnerable men in fisheries communities. These findings are supported by many studies that found woman in rural areas are generally poorer than rural men (Zain, 2018; World Food Security, 2014, Zainalaludin, 2010). The vulnerability may limit one's ability to earn an income (Mitra, 006). In masculine FAES women are already vulnerable (Chintey & Chintey, 2014; Sultan, 2006). Women live longer than men (DoSM, 2019; Tengku Aizan, 2015; WHO, 2007), and, in many cultures, it is easier for a single father to re-marry compared to a single mother, which can be one of the reasons why there are more single mothers than single fathers in any community (Stutzer & Frey, 2006).

Table 5: Correlate between Two Levels of Vulnerability and Two Levels of HFW by Sex Disaggregated

Level of Vulnerability	Male				Female			
	B-HFW		U-HFW		B-HFW		U-HFW	
	n	%	*n*	%	*n*	%	*n*	%
Low	**54**	**27.3**	27	13.6	31	15.4	14	6.9
High	46	23.2	71	35.9	**81**	**40.1**	76	37.6
Total	198 (100)				202 (100)			

*Note:

i) $p<0.05$
ii) Low = Single vulnerable type (1-VuT)
iii) High = Multiple vulnerable type (2-6 VuT)
iv) BHFW= Bottom level of HFW (high poverty risk)
v) UHFW= Upper level of HFW (low poverty risk)

Single mothers usually earned a lower income than single fathers (Stack & Meredith, 2018). Moreover, in masculine FAES, many rural single mothers are also highly dependent on their ex-husband for alimony (Wahab, Ghani & Yusof, 2018) because wives are usually unemployed and working for free to assist husbands in FAES. Thus, they depend on their husband for a living (Wahab, Ghani & Yusoff, 2018; Yeo, 2007). After the death of their spouses or divorce they may suffer high poverty risk (Walker, 2001; Masud & Zainalaludin, 2018).

Conclusion and Recommendations

This paper presents three conclusions concerning vulnerable freshwater fisheries community members in Peninsular Malaysia. First, on average, the vulnerable respondents in this paper were older persons with more older women than older men. The vulnerable women also had lower academic background, earned a lower income and a smaller percentage had house ownership compared to the men. Many vulnerable women are single mothers. Second, there is a relationship between the two levels of vulnerability and the sex of the respondents in that the majority of the women are in the highly vulnerable category and the majority of the men are in the low vulnerable category. In conclusion, women in freshwater fisheries communities are more vulnerable than the man. Third, a triangulated relationship among gender, poverty, and vulnerability is obtained in this paper. More women than men are in the worst category, which is highly vulnerable and low HFW (poor). The highly vulnerable women are poorer than the highly vulnerable men in freshwater fisheries communities.

Based on the three conclusions, this paper proposes four recommendations. First, income generating programmes, or any programme related to the vulnerable

freshwater fisheries community members in Peninsular Malaysia should be gender sensitive because women are poorer than men. Second, less masculine income generating activities that are suitable for the vulnerable individual should be identified in freshwater FAES. For instance, homestay, processed food, and eco-tourism activities.

Third, income generating programmes in freshwater fisheries communities should also be sensitive to the VuT besides gender. Two main VuT that need extra focus in any programme related to poverty eradication in freshwater fisheries communities are older people and single mothers. As an older person in freshwater FAES, they may have a lot of related experience and indigenous knowledge that can be used to teach the younger generation. They may earn an income through teaching and guiding younger freshwater fishermen or aquaculture operators. Besides earning money, the feeling of belonging in fisheries communities may increase among elderly people and the younger generation may get the benefit from the older generation.

Fourth, further studies related to the elderly and single mothers in freshwater fisheries community need to be conducted as well as in brackish water fisheries communities for policy and programme guidelines. The related programmes should focus on the needs of the vulnerable men and women in the fisheries communities to reduce their vulnerability and the poverty risk, especially among women.

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