

ADAPTIVE BEHAVIOUR AND ITS ASSOCIATED FACTORS AMONG DISPLACED POPULATION IN TAMAN BAYU DAMAI, JOHOR

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ABSTRACT

Background: Displaced population is a broad definition than encompasses refugees, internally-displaced population and relocated populations and this phenomenon can cause a lot of effect which can be economical, psycho-social, health and wellbeing. Adaptive behaviour is a compilation of social, conceptual and practical skills that a person learned to be able to play their role in daily living. This can be influenced by various factors like socio-demographic, socio-economic and physical health.

Materials and Methods: A cross-sectional study was conducted in Taman Bayu Damai, Pengerang, Johor from May 2018 to June 2018 among 554 relocated population. Respondents were selected using proportionate stratified sampling based on their previous localities prior to relocation. Number of respondents for each stratum is determined to be proportionate with its size compared to the whole area and randomised. Respondents were handed a self-administered questionnaire. The Spearman's Correlation was used to determine correlations between continuous variables. After categorisations, Chi-Square Test of Independence was used to determine the association between the categorical variables. Finally, multiple logistic regression using Enter method was used to identify significant predictors.

Result: The response rate was 92.3%. Response rate across all strata ranged from 84.3% to 97.3%. Five factors were found to be significantly associated with poor adaptive behaviour which are gender, education level, social support, marital status and monthly income. However, upon further analysis, none of these plus confounding factors was a significant predictor for poor adaptive behaviour.

Conclusion: Adaptive behaviour among displaced population in Taman Bayu Damai is generally good but there is still small portion of population that still struggling. These population can be targeted to avoid further deterioration and potentially lead to mental issues. Future intervention should focus on female, lower education level, lower income, widowed and divorcees and low social support and emphasis on religious and self-empowerment programmes.

Keywords: adaptive behaviour, displaced population, brief cope

1.0 Introduction

Displaced population happens all around the world. It is a broad definition that includes refugees, internally displaced population and relocated population. Refugees are different from internally displaced population because they crossed international borders. Relocated populations are the people who were displaced due to planned development. Relocated population usually will get benefits from their respective governments in many forms, like new housing, compensation, new job opportunities, and sometimes psychological support after being relocated. But these incentives rely heavily on the government or the relocation bodies. This means there is disparities among relocated population when comparing between developed nations, developing nations and underdeveloped nations (World Health Organisation, 2017).

Displacement can cause various effect on human, depending on the cause of displacements. People who were displaced would often lose family members, undergone family separation, lost their belongings and experience depression and trauma. These unpleasant experiences can be magnified with the problems that they faced post displacement, such as inequality in access to assistance, discrimination in aid provision, enforced relocation, sexual and gender-based violence, loss of documentation, recruitment of children into fighting forces, unsafe or involuntary return to resettlement and issues of property restitution (Ferris, 2008). Effects of displacement can be divided into economical, psycho-social, health and wellbeing.

According to Oxford Handbook of Positive Psychology, adaptive behaviour is defined as sets of skills that an individual nurtured throughout his life and be able to perform as was expected by the society or community. It is a compilation of social, conceptual and practical skills that a person learned to be able to play their role in daily living (Tasse, 2013). In other word, adaptive behaviour can be substitute with other terms that imply similar meaning, such as adaptive coping or coping skill. Failure to adapt to a new environment and surrounding would often result in stress, loss of productivity, which would ultimately lead to various psychological issues such as depression, anxiety and post-traumatic stress disorder (PTSD) (in context of the displacement).

Displaced population is considered as one of the most vulnerable groups of people. Displacement greatly affect a person's life and alters its course forever. Thus, it is very important for the government to enquire and screen this group of people to ensure any grave warning signs of adaptive difficulty is address early and a good intervention can be done to avoid any further damage psychologically along the line.

The general objective of this study is to determine the association of poor adaptive behaviour with socio-demographic, socio-economic, physical health and predictors of poor adaptive behaviour among the displaced population of Taman Bayu Damai, Johor.

Looking specifically into the displaced population of Taman Bayu Damai, to date no known exact data that measure adaptive behaviour was done previously. Klinik Kesihatan Bayu Damai is the principle local health clinic that serve this area opened since March 2016. The clinic had conducted routine mental health screening using Depression Anxiety and Stress Scale (DASS). Screening not just covers not just the displaced population in Taman Bayu Damai but also the surrounding traditional villages including the clinic staff itself. Most of the

forms are completed in bulk of 20-30 forms in a day following any functions or programs done by the clinic. Out of total of 549 completed DASS forms, 9 respondents show at least mild depressive symptoms (1.6%), 23 shows at least mild anxiety symptoms (4.2%) and 13 shows at least mild stress symptoms (2.4%). This means only 8.2% of the screened respondents gives positive DASS result. But when the forms were analysed further, only 79 out of 519 forms (14.4%) resulted in zero marks (presumably no depression, anxiety or stress symptom at all). This means the silent majority (77.4%) of the respondents did reported symptoms of depression, anxiety and stress but not captured by DASS screening (Klinik Kesihatan Bayu Damai, 2017).

For that, this study is proposed to investigate how well the affected population adapt and cope with their new lives even before any mental health issues arises. The finding and recommendation from it will be conveyed directly to the District Health Officer for pre-emptive action to be taken promptly and enables them to devise a plan or programme to avoid any health problem in the future especially mental health.

2.0 Materials and Methods

2.1 Study Design

A cross sectional study was conducted in Taman Bayu Damai, Johor. Taman Bayu Damai was chosen as the study location due to the populations were mainly relocated population that was displaced due to the development of megaproject Pengerang Integrated Petroleum Complex (PIPC) under Petroliam Nasional Berhad oil and gas company (PETRONAS). This project displaced approximately 4000 villagers from 1268 families (Buang, 2012). The study population are displaced population that meet the inclusion criteria. A total of 554 eligible respondents were recruited for this study. Proportionate stratified random sampling was used for this study. The division of strata is shown in Figure 1. The questionnaire on adaptive behaviour were derived from Brief COPE questionnaire (Carver, 1997) and was given in Malay and English language. The Malay version of the questionnaire was translated and its face and content validity were done in a pre-test by previous study (Yusoff, 2011). This study was approved by the Ethical Committee of Universiti Putra Malaysia (JKEUPM).

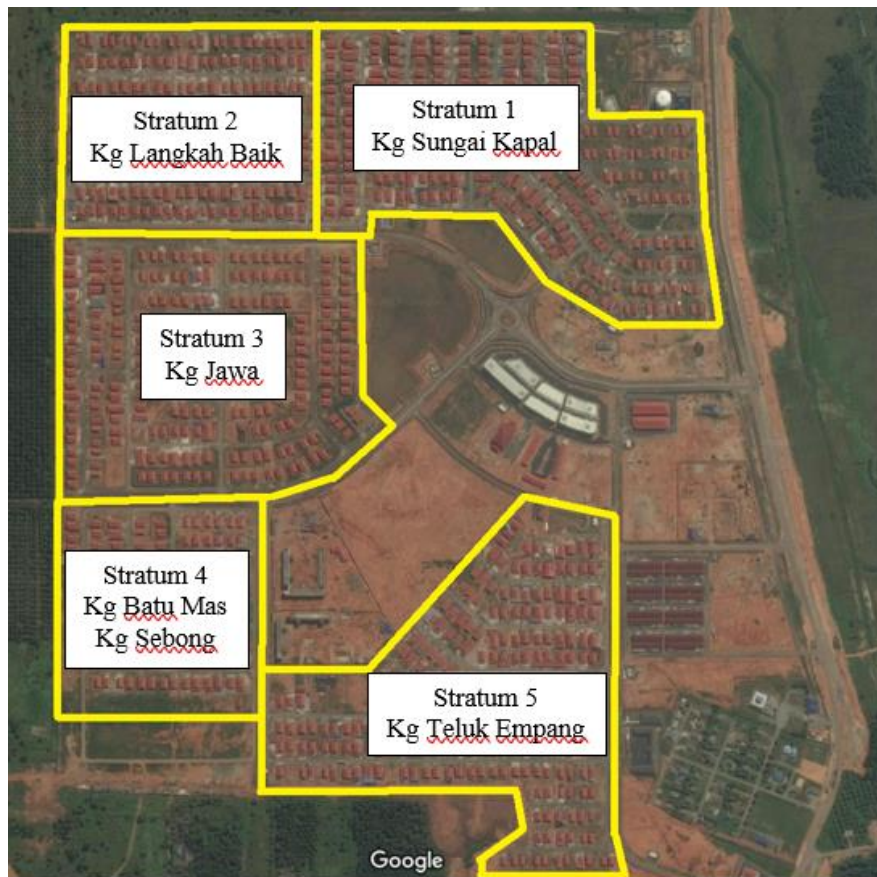


Figure 1: Map of Taman Bayu Damai with its respective strata. (Source: Google Map)

2.2 Measurements

The questionnaire that was used in this study is the Brief COPE scale, which was pre-tested and come in English language. This questionnaire was chosen due to its relevancy and suitability to measure the desired outcome compared to the other scales. Furthermore, the length of the questionnaire is also suitable for community survey to achieve the required sample size. This questionnaire is divided into 2 sections, the first part includes socio-demographic, socio-economic and physical health information's and the second part consists of the 28 items of the 14 scales. Each item responses were given on a Likert-type scale from 1 to 4 mark with the following statement: 'I haven't been doing this at all', 'I've been doing this a little bit', 'I've been doing this a medium amount' and 'I've been doing this a lot'. The 14 scales are Active Coping, Planning, Positive Reframing, Acceptance, Humour, Religion, Using Emotional Support, Using Instrumental Support, Self-Distraction, Denial, Venting, Substance Use, Behavioural Disengagement and Self-Blame.

2.2 Statistical analysis

Data analysis were facilitated using IBM Statistical Package for the Social Sciences software, Windows version 23.0. Continuous independent variables were screened for normality testing to avoid missing out any significant correlation. Then, bivariate analysis using Chi-square test of Independence and Fischer's exact test for the correction for all categorical data. Finally, a

multiple logistic regression was used to identify predictor for poor adaptive behaviour after adjusting with confounder. For all statistical analyses, a p value of less than 0.05 was considered significant.

3.0 Result

3.1 Characteristics of respondents

A total of 554 respondents participated in this study with a response rate of 92.3%. Response rate across all strata is between 84.3% to 97.3%. Table 3.1 show the socio-demographic characteristics of respondents. Majority of respondents are above 40 years of age (53.5%). There are more female respondents compared to male respondents (54.5%). Majority of respondents have secondary school education (21.6%). Most respondents live with 5 family members or more. Majority of the respondent are married (60.1%). Table 3.2 show the socio-economic characteristics of respondents. Most respondent are employed (50.5%) and Most have income level of RM1500 or less (59.5%). Table 3.3. show the physical health characteristics. Most respondents did not report any medical health problem (72.4%).

Table 3.1: Socio-demographic characteristics of respondents

Socio-demographic characteristics	Frequency (n)	Percentage (%)
Age (years) (N=542)		
Median (IQR)	43.00 (26,57)	
Minimum	18	
Maximum	100	
≤ 40	252	46.5
> 40	290	53.5
Gender (N=545)		
Male	248	45.5
Female	297	54.5
Education level (N=546)		
No education	25	4.6
Primary	118	21.6
Secondary	300	54.9
Tertiary	103	18.9
Social support (N=535)		
Median (IQR)	5.00 (3,6)	
Minimum	0	
Maximum	13	
≤ 4	243	45.4
> 4	292	54.6
Marital status (N=545)		
Single	148	27.2
Married	333	60.1
Others	64	11.7

Table 3.2: Socio-economic characteristics of respondents

Socio-economic characteristics	Frequency (n)	Percentage (%)
Income level (RM) (N=341)		
Median (IQR)	1500.00 (950,2075)	
Minimum	200	
Maximum	8500	
≤ 1500	203	59.5
> 1500	138	40.5
Employment status (N=543)		
Yes	274	50.5
No	269	49.5

Table 3.3: Physical health status of respondents

Physical health status	Frequency (n)	Percentage (%)
Hypertension status (N=550)		
Yes	123	22.4
No	427	77.6
Diabetes mellitus status (N=551)		
Yes	89	16.2
No	462	83.8
Co-morbidity (N=550)		
No co-morbidity	398	72.4
Single co-morbidity	92	16.7
Double co-morbidities	60	10.9

Table 3.4 shows the breakdown of adaptive behaviour score from the questionnaire. Most respondents reported good adaptive behaviour (71.1%). Among the 14 items explored using the adapted Brief COPE questionnaire, both questions about Religion has majority of respondents answered 4 (I've been doing this a lot) which stands at 57.8% and 54.3% respectively. Most respondent answered 3 (I've been doing this a medium amount) for Acceptance, Planning, Positive Reinterpretation. Most respondent answer 2 (I've been doing this a little bit) for Self Distraction, Use of Emotional Support, Use of Instrumental Support. Finally, most respondent answered 1 (I haven't been doing this at all) for Denial, Behavioural Disengagement, Humour and Self-Blame. One special finding from the questionnaire is that an overwhelming majority of the respondent answered 1 for both questions about Substance Abuse (97.8% and 97.7%). Two components have different majority answers for the two items, which are Active Coping (score 2 and 3) and Focus On and Venting of Emotion (score 1 and 2).

Table 3.4: Total Brief COPE scores among respondents, frequency and percentages of each items of Brief COPE questionnaire

Brief COPE score (N=554)	Frequency (n)	Percentage (%)
Total brief COPE score		
Median (IQR)		63 (55,71)
Minimum		28
Maximum		88
Poor (56 or less)	160	28.9
Good (57 and above)	394	71.1
Self-Distraction 1		
1	123	22.2
2	221	39.9
3	158	28.5
4	52	9.4
Self-Distraction 2		
1	154	27.8
2	206	37.2
3	133	24.0
4	61	11.0
Active Coping 1		
1	107	19.3
2	187	33.8
3	178	32.1
4	82	14.8
Active Coping 2		
1	61	11.0
2	132	23.8
3	233	42.1
4	128	23.1
Denial 1		
1	232	41.9
2	176	31.8
3	110	19.9
4	36	6.5
Denial 2		
1	256	46.2
2	173	31.2
3	83	15.0
4	42	7.6
Substance Abuse 1		
1	542	97.8
2	6	1.1
3	0	0
4	6	1.1
Substance Abuse 2		
1	541	97.7
2	4	0.7
3	2	0.4
4	7	1.3

Brief COPE score (N=554)	Frequency (n)	Percentage (%)
Use of Emotional Support 1		
1	163	29.4
2	204	36.8
3	138	24.9
4	49	8.8
Use of Emotional Support 2		
1	126	22.7
2	229	41.3
3	146	26.4
4	53	9.6
Use of Instrumental Support 1		
1	99	17.9
2	202	36.5
3	163	29.4
4	90	16.2
Use of Instrumental Support 2		
1	109	19.7
2	202	36.5
3	158	28.5
4	85	15.3
Behavioural Disengagement 1		
1	349	63.0
2	132	23.8
3	54	9.7
4	19	3.4
Behavioural Disengagement 2		
1	364	65.7
2	138	24.9
3	34	6.1
4	18	3.2
Focus on and Venting of Emotion 1		
1	138	24.9
2	210	37.9
3	158	28.5
4	48	8.7
Focus on and Venting of Emotion 2		
1	225	40.6
2	199	35.9
3	86	15.5
4	44	7.9
Positive Reinterpretation 1		
1	74	13.4
2	148	26.7
3	215	38.8
4	117	21.1
Positive Reinterpretation 2		
1	50	9.0
2	132	23.8
3	221	39.9
4	151	27.3

3.2 Association between socio-demographic, socio-economic and physical health with adaptive behaviour

In this study, correlations test was done between continuous variables namely age, social support and level of income using Spearman Rank Correlation test since data were not normally distributed. Out of these three, only social support were found to be significantly correlated with questionnaire score ($r(534) = 0.13, p = 0.003$).

Then, all data were categorised and analysed using bivariate analysis. Table 3.5 shows the association between socio-demographic characteristics and adaptive behaviour. Chi-square test of Independence shows there is statistically significant association but small association between poor adaptive behaviour and gender ($\chi^2 = 4.62, df = 1, p = 0.032$), poor adaptive behaviour and education level ($\chi^2 = 10.80, df = 3, p = 0.013$), poor adaptive behaviour and social support ($\chi^2 = 4.49, df = 1, p = 0.034$), as well as poor adaptive behaviour and marital status ($\chi^2 = 9.41, df = 3, p = 0.009$). However, there is no significant association between age and poor adaptive behaviour.

Table 3.5: Association between socio-demographic characteristics and poor adaptive behaviour

Characteristics	Adaptive Behaviour		p-value
	Poor n (%)	Good n (%)	
Age (years) (n = 542)			
≤ 40	73 (29.0)	179 (71.0)	0.861
> 40	86 (29.7)	204 (70.3)	
Gender (n = 545)			
Male	61 (24.6)	187 (75.4)	0.032*
Female	98 (33.0)	199 (67.0)	
Level of education (n = 546)			
Not educated	11 (44.0)	14 (56.0)	0.013*
Primary	43 (36.4)	75 (63.6)	
Secondary	83 (27.7)	217 (72.3)	
Tertiary	20 (19.4)	83 (80.6)	
Social support (n = 535)			
≤ 4	81 (33.3)	162 (66.7)	0.034*
> 4	73 (25.0)	219 (75.0)	
Marital status (n = 545)			
Single	39 (26.4)	109 (73.6)	0.009*
Married	90 (27.0)	243 (73.0)	
Others	29 (45.3)	35 (54.7)	

Note: * $p < 0.05$

Table 3.6 shows the association between socio-economic status and poor adaptive behaviour. There is a statistically significant association but small association between income level and poor adaptive behaviour ($\chi^2 = 4.85, df = 1, p = 0.028$). However, there is no association between employment status and poor adaptive behaviour.

Table 3.6: Association between socio-economic status and adaptive behaviour

Characteristics	Adaptive Behaviour		p-value
	Poor n (%)	Good n (%)	
Level of income (RM)			
≤ 1500	63 (31.0)	140 (69.0)	0.028*
> 1500	28 (20.3)	110 (79.7)	
Employment status			
No	87 (32.3)	182 (67.7)	0.145
Yes	73 (26.6)	201 (73.4)	

Note: * $p < 0.05$

As shown by Table 4.9, there is no association between hypertension status, diabetes status nor co-morbidities with poor adaptive behaviour.

Table 3.7: Association between physical health status and poor adaptive behaviour

Characteristics	Adaptive Behaviour		p-value
	Poor n (%)	Good n (%)	
Hypertension status			
No	298 (69.8)	129 (30.2)	0.281
Yes	92 (74.8)	31 (25.2)	
Diabetes status			
No	327 (70.8)	135 (29.2)	0.830
Yes	64 (71.9)	25 (28.1)	
Co-morbidity status			
No	119 (29.9)	279 (71.5)	0.725
Single	26 (28.3)	66 (71.7)	
Double	15 (25.0)	45 (75.0)	

3.3 Predictors of poor adaptive behaviour

For predictors of poor adaptive behaviour analysis, logistic regression was used. All variables were entered into single logistic regression (Enter method) to find variables with statistically significant of $p < 0.25$ to be included into the multiple logistic regression. Table 3.8 shows all result from the single logistic regression.

Table 3.8: Odd ratios between socio-demographic, socio-economic and physical health status

Variable	Crude OR (95%CI)	p-value
Age		
≤ 40	1	
> 40	1.03 (0.71, 1.50)	0.861
Gender		
Male	1	
Female	1.51 (1.03, 2.20)	0.032*
Education Level		
Not educated	1	
Primary	0.73 (0.30, 1.75)	0.480
Secondary	0.49 (0.21, 1.12)	0.089**
Tertiary	0.31 (0.12, 0.78)	0.013*
Social Support		
≤ 4	1	
> 4	0.67 (0.46, 0.97)	0.035*
Marital Status		
Others	1	
Single	0.43 (0.23, 0.78)	0.007*
Married	0.45 (0.26, 0.77)	0.004*
Income Level		
≤ 1500	1	
> 1500	0.57 (0.34, 0.94)	0.029*
Employment status		
No	1	
Yes	0.76 (0.53, 1.10)	0.146**
Hypertension status		
No	1	
Yes	0.78 (0.49, 1.23)	0.282
Diabetes status		
No	1	
Yes	0.95 (0.57, 1.57)	0.830
Co-morbidity		
None	1	
Single	0.92 (0.56, 1.53)	0.756
Double	0.78 (0.42, 1.46)	0.438

and poor adaptive behaviour

Note: *p < 0.05, **p < 0.25

Then, multivariable analysis was done to determine predictors for poor adaptive behaviour among populations. For this analysis, age was included as well to adjust for potential confounder. All six variables which have $p < 0.25$ (gender, education level, Social support, marital status, employment status and income level are included as well (Hosmer & Lemeshow, 2000). Then. Multiple logistic regression using Enter method were used to assess the impacts of these seven variables on the likelihood of poor adaptive behaviour among respondents. Table 3.9 shows that when all seven variables that were put into the multivariate model, none of them made a statistically significant contribution.

Table 3.9: Multiple logistic regression predicting likelihood of having poor adaptive behaviour

Variable	AOR (95%CI)	p-value
Age		
≤ 40	1	
> 40	0.69 (0.34, 1.37)	0.285
Gender		
Male	1	
Female	1.05 (0.61, 1.81)	0.858
Education Level		
Not Educated	1	
Primary	0.84 (0.16, 4.29)	0.830
Secondary	0.41 (0.08, 2.06)	0.280
Tertiary	0.26 (0.05, 1.53)	0.137
Social Support		
≤ 4	1	
> 4	0.71 (0.42, 1.19)	0.191
Marital Status		
Others	1	
Single	0.98 (0.30, 3.20)	0.978
Married	0.91 (0.33, 2.46)	0.845
Income level		
≤ 1500	1	
> 1500	0.87 (0.47, 1.61)	0.661
Employment Status		
No	1	
Yes	1.15 (0.57, 2.33)	0.691

4.0 Discussion

4.1 Association between socio-demographic, socio-economic and physical health status with adaptive behaviour

Socio-demographic factor such as gender were found to have significant association with poor adaptive behaviour. It was found that female respondents have worse adaptive behaviour compared to male respondents. This similar finding can be indirectly compared with previous studies done. This issue originated from a rural community where male dominance is still very much prevalent. Females were mainly home maker and stay at home mother. Even if their married, they still have more financial insecurities compare to their husband (Channaveerachari et al. 2015; Siriwardhana et al. 2013).

Lower level of education was found to be significantly associated with poor adaptive behaviour. This finding was echoed indirectly with previous studies. Lower level education causes less job opportunity and security. This in turn cause them difficulty in obtaining a new source of income post displacement (Siriwardhana et al. 2013; Bastin et al. 2013). One incidental finding from this study is that age are correlated negatively with level of education,

means many respondent that reported lower level of education are actually elderly people. This came with other problem in finding employment such as declining health and physical ability.

Lower social support was also significantly associated with poor adaptive behaviour. This finding was comparable to previous study (Getanda et al. 2015). This is due to low moral support and technical support. Small family member also means that there are less able-bodied individual that are able to work and find source of income, and this is a disadvantageous circumstances for that particular family.

Being divorced and widowed are associated with worse adaptive behaviour compared to being single or married. This finding is in keeping with previous studies done (Getanda et al. 2015; Kessler et al. 2006). Being alone will cause individual to feel lonely, and lack of moral, physical and social support. Loss of spouse or divorced means loss of source of income. Single mother often had their children living far away in urban to find employment and would be alone for a long period of time.

Socio-economic factor of monthly income was found to be significantly associated with adaptive behaviour. Study showed that lower income level was associated with poor adaptive behaviour. This is in concurrent with previous study (Ayazi et al. 2014). Lower income level cause reduced financial prowess and can affect a lot of things in these people's life. The main problem the population facing are damages to the house due to soil subsidence and lower financial prowess means it was almost impossible for these residents to pay the cost to fix their houses. Residents with small children also faced difficulty to pay the monthly bus fee to send their children to school which are now situated 15 kilometres away from the new settlement.

This study did not find any significant associations between age, employment status and physical health with adaptive behaviour despite some previous study said otherwise. And there was no positive predictor found from this study. These factors might be caused by differences in factor for displacement, different environment post displacement, different composition of population, different availability of aid post displacement, differences in compensation and the differences in the distribution of population in the study area compared to previous studies.

5.0 Conclusion and recommendation

Adaptive behaviour among displaced population in Taman Bayu Damai is generally good but there is still small portion of the population that are still struggling (28.9%). Most adaptive behaviour reported by respondents are Religion, Positive Reinterpretation, Planning, Acceptance and Active Coping. Significant association were found between adaptive behaviour and gender, level of education, social support, marital status and level of income.

The result of this study can be use to design a new prospective study in a new development that would involved displacement of population. Comparisons can be made before and after displacement, and also between displaced and not displace population within the same

locality that share the same traits. This new study would also need longer duration as adapting to a new environment is a slow process. A qualitative study can also be done to explore the experiences and difficulty that this people faces post displacement.

Local health clinic can formulate an outreach program to monitor adaptive behaviour to avoid further deterioration into mental health problem. This program can prioritise female, lower level of education, lower social support, widowed/divorced and lower monthly income as these group are more vulnerable to poor adaptive behaviour compared to another group. Religious-based and self-empowerment style program may have bigger impact to maintain good adaptive behaviour.

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Declaration

Author(s) declare that there is no conflict of interests. This manuscript has never been published in any other journal or duplicated in any mean concerned.

Authors contribution

Author 1: Information gathering, preparation and editing of manuscript

Author 2: Review and editing final manuscript

Author 3: Review manuscript

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