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Does Work Environment Impact Fertility Rate? A Comparison between Formal and Informal Sectors in Malaysia

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Abstract

The fertility rate of Malaysian women has shown a declining trend from having 3 children per woman in 2000 to 1.98 children per woman in 2015. This is an issue of concern for the labour market because declining fertility rates may lead to a stagnant population with other issues such as an ageing population and declining labour force due to low replacement levels. The main purpose of this study is to examine to what extent work environment has an impact on fertility rates in the formal and informal sectors in Malaysia. The study firstly reviews the current trend of women's fertility rate in Malaysia. It then further examines the working environment of married women in the formal and informal work environment by comparing two different states in Malaysia. Using self-administered questionnaires, 200 married women from the formal sector of Penang and the informal sector of Kelantan were identified through purposive sampling. Data was analysed using descriptive statistics and cross tabulation. The trend review shows an alarming decline in fertility rates in the last ten years. The empirical findings reveal that younger women, with higher educational level, earning a higher income and living in urban areas are more likely to have less number of children. In terms of working environment, women in the informal working sectors tend to have more children. Policy implications in terms of awareness and better work-environment in terms of family friendly policies are recommendations to encourage women to consider having more than one child because if this trend continues, it will have a serious implication on the quantity and quality of the labour force.

***Keywords*— fertility rate, family friendly-policies, formal and informal sectors, flexible working arrangements.**

1. Introduction

The World Bank defines total fertility rate (TFR) as the number of children that would be born to a woman if she were to live to the end of her childbearing years and bear children in accordance with current age-specific fertility rates (World Bank, 2012). Fertility is measured using number of

children.Replacement level is defined as a situation when women tend to give birth to children enough to replace her and her husband (Department of Statistics, 2014). A rate of two children per woman is considered the replacement rate for a population, resulting in relative stability in terms of total numbers. Since 2010, fertility rate in Malaysia has fallen below replacement level (Department of Statistics, 2012).

Looking at the global scene, World Bank (2015) shows that fertility rates across the world have substantially declined in recent years, falling significantly in the last decade and by 2011, was close to replacement level (World bank, 2015). The report also observes that nearly 50% of the world's population now lives in countries with TFRs that are below replacement level. Another remark in the report was regarding emerging economies which have TFRs that are already substantially below replacement level. Emerging economies also show the same declining trend. In China, decisions about fertility were imposed on the population by the government a decade back and this has resulted in falling fertility rates below replacement level now. Just last week, a new two - child policy was introduced in China The TFR for India, the second largest country in the world, is likely to dip below replacement in the next few years.

Countries with declining populations already account for nearly 20% of the world population. This rapid decline in human fertility has been due to contraception, sterilisation and abortion, the provisions of which have been generously supported by the government, while in western countries lower fertility has been achieved without coercion but by simple appeal to the selfish nature of man (United Nations, 2015).

The world's total population is currently increasing at a rate of 1% per year. According to the United Nations (2015), a low fertility population is forecast and the world's population will begin to fall between 2040 and 2045. Declining human fertility and population reduction is already having severe consequences in some countries and the situation will continue to deteriorate in terms of future labour supply of the country and a shrinking population. This might become a bigger threat to many industries that rely on labour. Currently many countries including United States, Italy, Japan and Singapore have TFR below replacement level.

According to the Malaysian Minister of Women, Family and Community Development, United Nations has projected that Malaysia's TFR will fall to 1.91 children per household by 2020 and is currently already 1.98 (Malay Mail, 2015). Based on the 2012 fertility rate, Malaysia's population is estimated a projected slowdown in population growth and will only reach 32 million in the next five years. If this happens, Malaysia will fall into the category of an elderly nation as 15% of the total population would be aged 65 years or older (Bernama, 2015).

Therefore, a declining TFR has consequences on the labour market, in terms of both quantity and quality of labour. The main purpose of this study is to examine to what extent work environment has an impact on fertility rates in the formal and informal sectors in Malaysia. The study firstly reviews the

current trend of women's fertility rate in Malaysia. It then further examines the working environment of married women in the formal and informal work environment by comparing two different states in Malaysia.

2. Literature Review

The economic theory by Becker (1960) has served as the foundation for most empirical analyses of fertility, including those that consider the response of fertility rates to variation in economic conditions. In standard static models of fertility behavior, parents maximize a utility function that depends on quality-adjusted child quantity and all other consumption, subject to a family budget constraint. According to Becker's model, permanent changes in wages, income and the price of children cause income and substitution effects that alter fertility decisions.

Ermisch's theory (1983) distinguishes between women who work and those who do not. Ermisch explains that as more females choose to work most of their lives, the average age at first birth increases and the intervals between births decrease. In particular, women employed in professional positions tend to wait longer between marriage and the birth of their first child. This implies that when the number of females in the labour force increases, fertility tends to decrease even during times of economic growth. In a similar study, Macunovich (1996) measured the interaction of relative income and female wages and found that that an increase in the male's relative income will cause a rise in fertility while an escalation in female wages will produce descending pressure on fertility. That is, a rising female wage will have a negative effect on fertility and vice versa.

In USA, Fernandez and Fogli (2009) in their study of 87,305 American born women found that cultural proxies have positive significant explanatory power on TFR even after controlling for education and spousal characteristics.

An early research in Malaysia done by Ying (1992) on determinants of fertility behavior among the three main ethnicities found a sharp decline in Chinese and Indian TFR as educational level and market work increases. On the other hand, Malay fertility behavior displays little relationship with socio-economic variables. Hashim (2010) also explored the effects of urbanisation on roles of women and the extent it influences their fertility.

Findings from the study indicate that progress in women's education and participation in the public sphere and rapid urbanisation of the Malay society within the past four decades had caused a decline in fertility among Malay women. The study also found that women's employment, socio-cultural factors (including religion) and urban or rural background do influence the decision on the number of children they have. Another major finding of the study is that the lack of adequate support system that had forced

some women to leave the public sphere. Women who juggle between work and family often felt guilty and some had to decline job promotion and forego opportunities for getting further academic qualifications.

This study focuses more on working environment and fertility rates in the informal and formal sector.

3. Methodology

This study set out to examine whether the working environment of married women has an effect on fertility rate and the number of children they had. As the objective was to compare fertility rate between women working in the formal sector and informal sector, two states in Malaysia were identified. The Department of Statistics Report (2013) showed that the state with the highest fertility rate was Kelantan and the state with the lowest fertility rate was Penang. At the same time, majority of the respondents in Kelantan were operating their own small-scale businesses, a very good representation of the informal sector. While in Penang, all the working women were working in the formal sector.

This study was conducted in late 2013 and took two months to complete as it involved two different states. A self-administered survey questionnaire was given to 200 women, 100 from the urban, formal sector in Penang and 100 from the rural, informal sector in Kelantan. The study focused only on married women with young children. Using purposive sampling in terms of marital status, area of living and type of job sector, this study was limited only to the states of Kelantan and Penang. Both urban and rural respondents from Kelantan and Penang were identified using convenient sampling. Response rate was high as the researcher carried out the survey personally.

The questionnaire consisted of three main categories. Section A consisted of demographic profile; Section B consisted of family responsibilities; Section C consisted of working environment. Data was analysed using SPSS version 20. Descriptive statistics and cross tabulation analysis was done and inferential statistics were used to provide adequate scope for drawing logical conclusions on the reasons for women's different fertility rates.

4. Findings And Discussion

4.1 Trend Review of Fertility Rate in Malaysia

Table 1 shows the trend analysis of Total Fertility Rates in Malaysia since the year 1958 until 2013 by Department of Statistics, Malaysia (2014).

Table 1 - Fertility Rate in Malaysia, 1958-2013

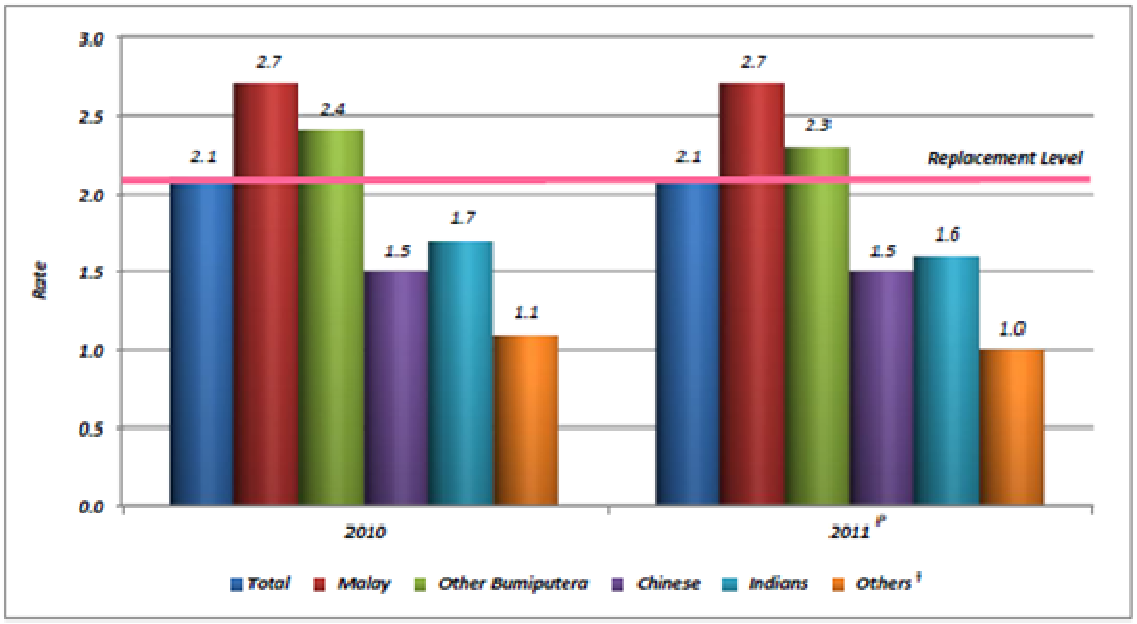
Year	Total fertility rate	Year	Total fertility rate	Year	Total fertility rate	Year	Total fertility rate	Year	Total fertility rate
1958	6.3	1969	5.1	1980	4.0	1991	3.4	2002	2.6
1959	6.2	1970	4.9	1981	4.0	1992	3.5	2003	2.5
1960	6.0	1971	4.9	1982	4.0	1993	3.5	2004	2.4
1961	6.2	1972	4.7	1983	3.8	1994	3.4	2005	2.4
1962	6.0	1973	4.5	1984	3.9	1995	3.3	2006	2.3
1963	6.0	1974	4.4	1985	4.0	1996	3.2	2007	2.3
1964	6.0	1975	4.3	1986	3.9	1997	3.1	2008	2.3
1965	5.6	1976	4.2	1987	3.7	1998	3.0	2009	2.3
1966	5.7	1977	4.1	1988	3.7	1999	2.9	2010	2.2
1967	5.4	1978	4.0	1989	3.4	2000	3.0	2011	2.1
1968	5.4	1979	4.0	1990	3.5	2001	2.8	2012	2.1
								2013	1.9

Source: Department of Statistics (2014)

High fertility rate (more than 4)
Medium fertility rate (3)
Low fertility rate (2 and below)

Based on the graph in Figure 1, it shows that there is a decreasing trend in TFR since 1958. Based on United Nations (2012) categorisation, the green highlight indicates high fertility rate from 4 to 6. The yellow highlights the medium rate of 3 and the brown highlight is the low fertility rate (2 and below). 4 to 6 children is considered as high fertility rate, average fertility rate is 3 children while 2 and below is considered below replacement level and is categorised as low fertility rate. We note that Malaysia reached low TFR from 2001, but the replacement level was reached at 2010 whereby, a married couple tends to have only 2 children that can only replace themselves.

Figure 1: Total Fertility Rate by Ethnic Groups, Malaysia, 2010–2011



1 Includes non-Malaysian citizen
The rates are per every woman age 15-49 years

Source: Department of Statistics, 2012

4.2 Demographic Profile

The respondents in this study are married, working and have children. 100 respondents are from Penang and 100 respondents are from Kelantan. In terms of age group and educational level, there is an even distribution. A majority (45%) of the women are in the age group of 30-39 years. In terms of women's highest educational level attained, 33% of the women are degree holders and 31% of them are

diploma holders. The spouse's highest educational level shows a reversal where a majority (35%) of them have completed SPM and only 26% are degree holders. Some of these women and the spouses have postgraduate and professional degrees.

As for the income level, nearly half of these women (46%) are earning in the income range of the RM1001 - RM2000 per month. The spouse's personal income shows that 54% of them are in the RM2001 - RM3000 income group. However, nearly half of these women (48%) are from household income groups of RM4001 - RM6000.

A majority of the respondents (65%) are Malays, 27.5% Chinese and 7.5% Indians. As for the ethnic composition of the respondents, care was given through purposive sampling in order to obtain the sample as close as possible as the Malaysian population composition. Most of the selected women in this study come from urban areas (77.5%) and the remaining 22.5% are from rural areas. However, in the urban areas of Kelantan, they were working in the informal sector.

4.3 Demographic Factors and Fertility Rate

Table 2 : Influence of Demographic Factors and their significance on Fertility Rate

DEMOGRAPHIC PROFILE					
	NUMBER OF CHILDREN				**TOTAL**
	0-2 children		**3 and more children**		
	(N)	**(%)**	**(N)**	**(%)**	**N (%)**
Age*	74	37	126	63	200 (100)
a) 20-29 years old	21	72	8	28	29 (100)
b) 30-39 years old	32	36	58	64	90 (100)
c) 40-49 years old	18	29	44	71	62 (100)
d) 50-59 years old	3	16	16	84	19 (100)
Age of marriage	74	37	126	63	200 (100)
a) younger than 20 years old	9	26	26	74	35 (100)
b) 21-25 years old	52	39	82	61	134 (100)
c) 26-30 years old	8	40	12	60	20 (100)
d) 31-35 years old	5	45	6	55	11 (100)
Self's highest educational level*	74	37	126	63	200 (100)
	7	12	53	88	60 (100)

a) lower education	67	48	73	52	140 (100)
b) higher education					
Spouse's highest educational level*	74	37	126	63	200 (100)
	10	14	61	86	71 (100)
a) lower education	64	50	65	50	129 (100)
b) higher education					
Monthly household income*	74	37	126	63	200 (100)
a) RM1000-RM2000	0	0	2	100	2 (100)
b) RM2001-RM4000	11	24	35	76	46 (100)
c) RM4001-RM6000	41	43	55	57	96 (100)
d) RM6001-RM8000	6	23	20	77	26 (100)
e) RM8001-RM10000	7	54	6	46	13 (100)
f) Above RM10000	9	53	8	47	17 (100)
Ethnicity*	74	37	126	63	200 (100)
a) Malay	34	26	96	74	130 (100)
b) Chinese	35	64	20	36	55 (100)
c) Indian	5	33	10	67	15 (100)
Area of living**	74	37	126	63	200 (100)
a) rural	11	24	34	76	45 (100)
b) urban	63	41	92	59	155 (100)

*significant at 10%; ** significant at 5%.

Table 2 shows demographic factors which have a significant influence on TFR whereby 0-2 children is considered low and 3 and more children is considered high (World Bank, 2015). Based on Table 3, younger women tend to have less children (72%), whereby the older women in the age group of above 40-49 years tend to have more children (more than 71%). Age was a significant factor. This conforms to studies by Lehar (2012) who found that age significantly does influence the number of children women have.

At some circumstances women in Malaysia literally delayed their birth because of their jobs, education or perhaps age of marriage. However in this study, it was found that age at the time of marriage is not significant. This finding is in contrast to the previous research by Elizabeth et al. (2008) whose study done in European Union (EU) countries. Besides this could be because, most of the women in the sample are married at the age of 21-25 years old.

A majority (88%) of the women who had more children have lower educational level. In this study, primary and secondary educational levels are considered as lower educational level and diploma, degree, postgraduate and professional degree are grouped as high level of education. From the findings it

shows that the lower educated women (88%) tend to have more children than (48%) of women with higher education level that have 2 or less children. It is a similar situation for the spouses, whereby the majority of them (86%) were lower educated and have more children.

Self's and spouse's highest educational level are found to be significant. This conforms to previous studies by Blacklow (2006), Ying (1992) and Hashim (2010) that had significant results based on women's education. Furthermore, Narayan (2006) declared that female education and female labour force participation are found to be the main determinants of fertility in Taiwan in the long run.

Higher education is always a dilemma for a woman whereby they need to choose between self-satisfaction and family, causing a delay in childbirth and fertility rate will actually decrease. Education also is strongly related to income whereby, it is believed that the more educated a person, the greater the income they will receive from employment. But somehow, in this study it contradicts where the educational levels do not reflect their income level.

This is because, most of our respondents are literally businesswomen, they own businesses and basically the jobs that they are involved in do not need any special skills. Moreover, women who run a business in these states most probably inherited the business from their family. Hence, their businesses are well known and already have many regular customers.

It is intereting to note that most of the families in those two states who earn an income around RM2001-RM4000 and RM6001-RM8000 have more children whereas (54%) of the families that earned RM8001 and above recorded fewer number of children. Monthly household income significantly influences the number of children. This conforms to findings by Risse (2006) who found that an increase in income of USD$10 000 per annum was found to increase the probability of having a child by 1.75 percentage points. Blacklow (2006) on the other hand found that women's wages were generally found to have a significant and negative effect on fertility.

To examine work environment and TFR, this study had compared two different phenomenon in Malaysia where Penang is identified as an urbanised state since it recorded a high urbanisation rate. On the other hand, Kelantan is a state that recorded lowest in the urbanisation level. By having this income gap it indirectly reflects the standard of living between these two states. Women in Penang were working in a more formal work-environment concentrating in the manufacturing and industrialised sector but on the other hand the Kelantanese were in the informal sector of wholly owned businesses and personal services. Therefore, the difference in term of standard of living might cause a different impact to their earning capacity.

Based on Table 2, Malays have more children compared to Chinese and Indians and the ethnicity and religion were found to have significant influence in TFRs. Research done by Ying (1992) states that

empirical evidence on determinants of fertility behavior in Peninsular Malaysia shows that the sharp decline in Chinese and Indian marital fertility concur with cross-section evidence that women's education and market work have a negative impact on fertility.

Another significant variable is area of living. Most (76%) of the respondents who have more children came from the rural area of the states. On the other hand, (41%) of the respondents who have less children came from urban area of the states and tended to have less number of children. This variable is significant at 5% level of significance. Hashim (2010) confirmed the findings whereby urban and rural backgrounds do influence the decision on the number of children to have.

4.4. Working environment and Fertility Rates

Table 3 shows the working environment that is divided into two sectors which are the formal working sector and the informal working sector. A majority (62%) of the respondents were from the informal working sector since most of these women are involved with wholly owned businesses and personal services. As for the formal working sector, most (80%) of the respondents were working in the government sector, manufacturing sector and professional services sector. Almost half of the spouses (48%) are working in the government sector and (39%) are working in the private sector.

Table 3 - Working Environment Profile of Respondents By Sector

WORKING ENVIRONMENT PROFILE		
	Frequency (N)	**Percentage (%)**
	200	100
Formal working sector	77	38
Informal working sector	123	62

Table 4: Influence of Working Environment on Number of Children

WORKING ENVIRONMENT PROFILE					
	NUMBER OF CHILDREN				TOTAL
	0-2 children		3 and more children		
	Frequency (N)	Percentage (%)	Frequency (N)	Percentage (%)	N (%)
	74	37	126	63	200 (100)
Formal working sector	40	52	37	48	77 (100)
Informal working sector	34	28	89	72	123 (100)

FORMAL WORKING SECTOR					
Self-Type of employment*	40	52	37	48	77 (100)
a) private sector	6	50	6	50	12 (100)
b) government sector	34	52	31	48	65 (100)
Spouse-Type of employment*	35	49	36	51	71 (100)
a) private sector	18	64	10	36	28 (100)
b) government sector	12	35	22	65	34 (100)
c) self-employed	5	56	4	44	9 (100)
Working conditions*	40	52	37	48	77 (100)
a) little stress	14	45	17	55	31 (100)
b) stressful	26	57	20	43	46 (100)
Flexible working arrangement*	40	20	37	48	77 (100)
a) yes	29	30	27	70	56 (100)
b) no	11	52	10	48	21 (100)
INFORMAL WORKING SECTOR					
Working conditions*	34	28	89	72	123 (100)
a) little stress	13	22	45	78	58 (100)
b) stressful	21	32	44	68	65 (100)
Number of working hours per week*					
a) 0 to 60 hours	34	17	89	83	123 (100)
b) 61 hours and above	5	19	22	81	27 (100)
	29	85	67	15	96 (100)
*significant at 10%; ** significant at 5%;					

4.5 Formal working sector

The formal working sector in this study refers to women who worked generally standard working hours, in the government and private sector. Some of them were in the professional field while others were academicians.

Table 5 shows that the type of employment of women and their spouses have a significant on TFR. Respondents who worked in the government sector tend to have more children (52%) than those who worked in the private sector. More than half (64%) of the spouses who worked in the private sector have lesser children. On the other hand the spouses who worked in the government sector tend to have more children (65%). This finding conforms to research done by Hashim, (2010) where the results were significant. Furthermore Risse, (2006) found that in particular, women employed in professional positions tend to wait longer between marriage and the birth of their first child. He also found that in single-earner households with only one male wage earner, if the male wage rises rapidly and the cost of children remains constant, that family will have more children.

Next, findings show that respondents who are stressful with their working conditions tend to have fewer children. In this study, more than half (57%) of the women are stressful and 55% are a little stressed with their working conditions. Working conditions have a significant relationship with number of children. In this study various types of employment are examined, therefore it might also relate to the workload and the environment. Perhaps the private sector and the government sector might not have the same portion of workload. The size of the company should be considered as well. The bigger the company, the more problems it may lead to. If the company is smaller it may lead to better management and a comfortable environment.

Flexible working arrangements (FWAs) include flexi hours, permanent part-time work, working from home, teleworking, job sharing and compressed week. FWAs give workplace flexibility and work time flexibility to the respondents. The flexibility of time is important at the beginning of children's growth since infants need extra care. 70% of the respondents who have FWAs tend to have more children since they have extra time to manage their work and family responsibilities. Perhaps, FWAs in a formal sector does have a significant relationship with number of children. This conforms to studies done by (Subramaniam, 2010) who found that FWAs have an effect on women's decision to exit the labour market.

4.6 Informal working sector

The informal working sector in this study refers to women working in jobs which are more flexible in nature and most of them were self-employed owning small businesses.

The working conditions of the informal working sector for those respondents are quite similar to the formal working sector. 78% of the respondents who have little stress in their working conditions tend to have more children. Perhaps, the mental and emotional state of mind of women could influence their decision making on the number of children to have.

The number of hours worked per week was also one of the variables in this study. Since the informal working sector does not have fixed and scheduled time of working, it is interesting to know how the number of working hours per week will affect the number of children. This study found out that 81% of the respondents who work 60 hours and less weekly, have more children. 70% of the respondents who work more than 61hours per week have fewer number of children. Therefore, from the findings it shows that working hours do have a significant effect on number of children.

A further cross tabulation was done and the results are shown in Table 5. It is noted that self's type of employment, spouse's type of employment, working conditions, childcare facilities, and flexible working arrangements in the formal sector have a significant impact on TFR. Whereas in the informal sector, only working conditions and working hours have a significant effect on TFR.

Table 5 - Working Environment and Significant Factors

WORKING ENVIRONMENT			
FORMAL WORKING SECTOR			
Variables	***Value***	***df***	***Asymp. Sig (2-sided)***
Self's type of employment*	12.025	2	0.002
Spouse's type of employment*	12.849	3	0.005
Working conditions*	14.502	4	0.006
Childcare facilities*	13.361	2	0.001
Flexible working arrangements*	12.004	2	0.002
INFORMAL WORKING SECTOR			
Working conditions*	13.670	4	0.008
Number of working hours per week*	13.237	2	0.001

5. Conclusion

Overall, a few conclusions can be inferred from this study.

Firstly, the TFR in Malaysia is declining and has reached below replacement level.

Secondly, in this study it was found that the main factor that influences TFR is area of living and the working sector. Area of living matters in a way of measuring standard of living and cost associated with it such as cost of living and cost of education. It relates to working conditions and working hours. This is due to the matter of having flexibility of work and flexibility of time to cope with career and family responsibilities. Women who experience flexible working arrangements are more likely to have more children.

Thirdly, socio-demographic factors such as age, self's highest educational level, spouse's highest educational level, monthly household income, area of living and ethnicity have a significant impact on the TFR of Malaysian women. Women who are younger, more educated, earning a higher income, working in the formal sector with more stress and less workplace flexibility tend to have less children. The TFR among the Chinese and Indians is declining faster than the Malays.

As this study covers only Kelantan and Penang, further research should also explore the other states in Malaysia to represent the fertility trend of the country, using a larger sample.

6. Implications And Policy Recommendations

The implications that can be made from this study are multiple. The most apparent one is that a continuous decline in TFR in the country will lead to a labour shortage.

Secondly, this trend if not checked will lead to an ageing population. As stated by Risse (2006) age structure of the population has significant impact on the economy.

Thirdly, it was noted that the educated women are having lesser children, this implies that the issue of quality labour will be at risk.

Fourthly, working conditions play a vital role in determining TFR and hence our future labour input.

Finally, working conditions have to be examined more closely as it involves work stress and the work-life balance effect.

The results of this study are advantageous to policy makers, employers and the society on the whole so as to create good, effective policies and programs to cater for women's wellbeing and hence increase the TFR.

The first policy recommendation here would be the provision of childcare. Policy makers should thoroughly consider providing childcare with more scrutiny on cost, infrastructure and reliability. The cost of childcare should be more affordable based on living area and also be more trustworthy. Perhaps, it can be proposed to the government to plan a "Childcare 1Malaysia" program along the lines of 'Klinik 1Malaysia', 'Restaurant 1Malaysia' and 'Kedai rakyat 1Malaysia'.

The second recommendation involves policy makers and employers with regard to working arrangements. As noted by Subramaniam (2010) in her earlier study, family friendly working arrangements may be one method to help women stay in the labour force and juggle the double burden. Family friendly policies such as flexible working time, working from home and part-time work may provide married women with children who require parental time, to balance between career and family. This gives rise to some underlying issues which is of great concern and needs immediate action.

However as mentioned by the Minster of Women, Family and Community Development Minister, various programmes have been done to create awareness among couples on declining TFR but the ultimate choice is still left to the couple (Malay Mail,2015).

As Malaysia moves towards achieving an industrialised nation status and quality of life is utmost in everybody's mind, one should also take note that children are the backbone of the future nation.

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