

UAE Maternal and Child Health Policy Influence: Usage of the Andersen Model

Immanuel Azaad Moonesar, Assistant Professor, Mohammed Bin Rashid School of Government, Dubai, UAE and Jim Goes, Professor, Walden University, US

ABSTRACT

Maternal and child health mortality is a formidable challenge for health systems around the world, according to the World Health Organization. Health professionals and practitioners within the United Arab Emirates were studied to determine the extent to which they were involved in the policy-making process, and the potential impact that involvement may have on new or revised MCH policies. The Andersen model of healthcare services utilization provides an appropriate framework for this research, enabling the analysis that influences the policy-making process in the area of MCH. Independent variables measured nationality, education, work experience, and organizational support. The dependent variable included policy-making process.

The quantitative methodology included data collection from a sample of 380 health professionals and practitioners. Results of the study revealed statistical relationships where the most significant predictor of policy-making was organizational support, which explained the 42% variation in policy-making. Nationality and education followed this predictor in order of importance. The research findings could positively influence decision makers' actions in formulating new guidelines, public policies, and strategies for the development of maternal and child health across the UAE region. Future research should aim to include other factors that may have an influence on the policy-making process.

INTRODUCTION

Maternal and child mortality in contemporary times remains a foremost challenge to the health systems internationally. Countries worldwide have been working towards reducing maternal and child mortality rates consistent with recommendations from the WHO, the United Nations Population Fund (UNFPA), and the United Nations Children's Fund (UNICEF). Annually, over 3 million babies die worldwide, primarily due to complications during birth, prematurity, and preventable or treatable diseases, including infections (Darmstadt et al. 2012). Within developing countries, over 40 million women give birth on the premises of their home without any assistance from health professionals and practitioners (Lawn et al. 2012).

Within the Eastern Mediterranean Region (EMR), commonly known as the Middle East, mechanisms have been put in place towards meeting the Millennium Development Goals (MDG) 4 and MDG 5. However, progress in attaining the targets (4.4%) for reducing child mortality (MDG 4) and the targets (5.5%) for reducing maternal mortality (MDG 5) is slow, as the current rate of decline of death rates between 1990 and 2010 are at 1.5% and 1.9% respectively (Bhutta 2013). Several EMR countries such as Afghanistan, Djibouti, Egypt, Iraq, and others are struggling to achieve the targets of improving child and maternal health within the EMR. These are classified as the priority countries (WHO-EMR 2013). Therefore, it was critical to examine the policies, strategies, and mechanisms used by the United Arab Emirates (UAE) for reducing the child and

maternal mortality rates over recent years. The research was designed to explore and understand the various mechanisms in an effort to reduce the child and maternal mortality rates across the priority countries of the EMR through Maternal and child health (MCH) policy-making. Factors such as access to education, political and economic opportunities, and the delivery of infant and maternal healthcare services affect the performance of meeting the needs of pregnant mothers and children under five years within the EMR priority countries.

The purpose of the correlational study was to investigate the policies and strategy processes used by health professionals for improving MCH policy to reduce child and maternal mortality rates using the Andersen Model. The results of the study have relevance to positive social change by generating evidence on how maternal and child mortality rates can be further reduced (within the priority countries of the EMR), through input from health professionals and practitioners in the region.

ANDERSEN MODEL

Within quantitative research studies, theory is established at the beginning of the study before the actual scientific analysis begins. The theoretical framework that grounds this research is the concepts of the Andersen model of healthcare services utilization. This model was developed by Andersen (1968) to examine healthcare settings and processes (Andersen 1995; Andersen and Newman 1973), as illustrated in Figure 1.

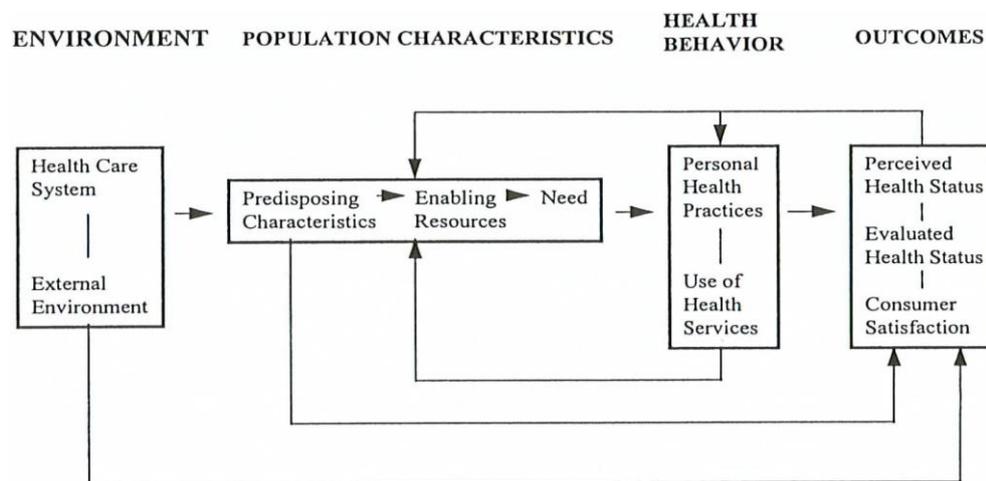


Figure 1. The Andersen model of healthcare services utilization (1995). From “Revisiting the Behavioral Model and access to Medical Care: Does It Matter?” by R. M. Andersen, 1995, *Journal of Health and Social Behavior*, 36, p. 8. Copyright 1995 by the American Sociological Association. Reprinted with permission.

The Andersen model is one of the most frequently used theoretical frameworks in healthcare administration (Brown, Barner, Bohman, and Richards 2009; Jahangir, Irazola, and Rubinstein 2012; López-Cevallos and Chi, 2010; Najnin, Bennett, and Luby 2011; Young et al. 2006). The model is focused on examining healthcare settings and processes (Andersen 1968, 1995; Andersen and Newman 1973). In the field of MCH, this model is widely used by many researchers

(Austin et al. 2008; Goldsmith 2002; Hughes and Wingard, 2008; Lo and Fulda 2008; Stein et al. 2007). However, there are limited research studies on the topic of policy-making and development, and the influence of policy making in reducing mortality rates. The theoretical framework helped to focus on how to employ the Andersen model in exploring the factors associated with MCH care professionals' and practitioners' involvement in policy-making and development.

There are three components of the Andersen model: predisposing factors, enabling factors, and need factors (Andersen, 1995; Andersen and Newman, 1973). A systematic review of the Andersen model was adopted from a recent research publication by Babitsch, Gohl, and Lengerke (2012) that highlighted research studies on the topic of MCH and policy-making using the Andersen model.

In this research study using the Andersen model (Aday and Andersen 1981; Andersen 1995; Babitsch et al. 2012; Kim et al. 2006), the predisposing factors such as gender, education, occupation, and nationality and enabling factors such as (but not limited to) years of work experiences and level of organizational support and need factors such as the number of health professionals and practitioners maternal and child care/health involved in the policy-making process were examined. The study addressed a potential linkage between the Andersen model and the MCH policy-making process. This linkage was established through the identification of population characteristics of health professionals and practitioners and the social influence on the MCH policy-making process. These predisposing, enabling, and need components are the IVs and DV of the study.

MATERIALS AND METHODS

The IVs within the study included nationality, organizational support, level of work experience, and level of education of the health professionals and practitioners within UAE, as well as the type of services used in MCH. The DVs included the five phases of the policy-making process and development, that is, policy preparation, policy formation, policy adoption and legitimization, policy implementation, and policy assessment and evaluation.

STUDY POPULATION

The quantitative methodology included collection of data from a sample of the population of health professionals and practitioners involved in the MCH care and management across the UAE. According to reports from the UAE National Bureau of Statistics data for 2011, the total population of the UAE health professionals and practitioners was 34,603 (UAE Statistics 2013). The population in 2011 was comprised of 2,796 health professionals and practitioners working at health centers affiliated with the UAE Ministry of Health, 5,624 working at hospitals affiliated with the UAE Ministry of Health, 5,580 working at government health establishments, and 20,603 working

at private health centers and hospitals. From these 34,603 healthcare professionals and practitioners, there were 7,850 working within the field of MCH and, therefore, this was the study population. Based on the statistical sample size table (Krejcie and Morgan 1970; Moonesar 2015; Wilson 2014) and reference to a sample size calculator (Raosoft Inc. 2004; Wilson 2014; with a 5% margin of error), confidence level as 95% and study population size as 7,850 and the response distribution as 50%, the minimum sample size for the study was 366 health professionals and practitioners involved in the MCH care across the UAE.

DATABASE

A database was developed identifying MCH professionals and practitioners in the UAE. The database development complied with similar steps as exhibited by Chan et al. (2011) included establishing a set of standardized data set elements. The MCH professionals' information was gathered into one repository. This database was not made public. A survey instrument was designed along the constructs of allowing many of the participants to provide answers to the questions as a result of different variables. The participants were surveyed voluntarily. The data collected from the surveys in the form of the IV and DV sets were then analyzed using statistical approaches of correlations such as multivariate analysis and multiple regressions from the SPSS program.

INSTRUMENTATION

The instrument survey questionnaires were developed in English language only and disseminated via online mechanisms for the correlational research study. Initially, pilot testing of the survey instrument included information about the informed consent form, the survey's objectives, benefits and any potential risks. Cronbach's Alpha was conducted to determine the reliability of the survey instrument. The reliability coefficient of all the items was higher than 0.80 which is considered as "acceptable" in most social science research situations.

RESEARCH QUESTIONS:

The research questions for the research study were as follows:

- To what extent, if any, does the nationality of the MCH professional relate to the level of influence in policy-making?
- To what extent, if any, does the level of education attained by the MCH professional relate to the level of influence in policy-making?
- To what extent, if any, does the number of years of work experience of the MCH professional relate to the level of influence in policy-making?
- To what extent, if any, does the level of support from the institution of employment of the MCH professional relate to the level of influence in policy-making?

STATISTICAL ANALYSES

Qualtrics software was used for collecting the survey data. Qualtrics software provided the flexibility to design the survey. The data collected were exported in file formats such as SPSS, Microsoft Word, and Microsoft Excel and were exported in both forms as coded values or coded text. Within the Qualtrics survey system, the data were exported in a format as the Statistical Package for the Social Sciences (SPSS). Data cleaning and screening procedures were applied to the exported SPSS survey data. One way that the data were cleaned was through the scanning of data for errors or unexpected characters through the checking of the ‘frequencies’ for each variable (Tabachnick and Fidell 2007, p. 92).

Given the nature of the research questions and hypothesis, the number of variables and the level of the measurement of each of the variables, multiple regression analysis was selected to predict the level of the healthcare professionals’ involvement in policy-making to the IVs such as nationality, education, work experience and organizational support. Multiple correlation and regression were selected because the IVs may or may not be correlated with each other, and the aim was to study the relationships among many variables. The study includes more than three measurement variables where one is the dependent (Y) variable, and the remaining of the variables are the independent (X) variables. The multiple regression technique evaluated whether the model provided a reasonable fit to the data and the contribution of each of the IVs to the DVs (Tabachnick and Fidell 2007, p. 26).

APPROVALS

The survey instrument included an application for ethics adherence and clearance and approval of the Institutional Review Board (IRB) in the United States of America.

RESULTS

Demographic Characteristics of the Sample

The demographic characteristics of the 380 respondents who completed the survey are shown in Table 1. Among the 380 respondents, the majority were female (57.6%), ages 20 to 50 (53.1%), had more than 11 years of work experience (38.1%), worked in the private sector (39.3%), and had a master’s degree (28.7%). The demographics of this sample are similar to the population of healthcare services delivery (Habib and Vaughan, 1986; Mahfouz et al., 2004). Table 1 displays the demographic characteristics and frequencies of this current study.

Table 1 Demographic Characteristics of the Study Sample

Variables		<i>N</i>	%
Gender	Female	219	57.6
	Male	161	42.4
Age	Below 20	2	0.5

Variables		N	%
	20-35	205	53.9
	36-50	137	36.1
	51+	36	9.5
Education level	Bachelors	121	31.8
	Postgraduate diploma	40	10.5
	Masters	192	50.5
	Doctorate	26	6.8
	Other	1	0.3
Years of experience	0-5	20	5.3
	6-10	101	26.6
	11+	259	68.2
Nationality	Local/Emirati	128	33.8
	Non-Emirati	251	66.2
Title	General Practitioner	82	21.6
	MCH Specialist	75	19.7
	Medical Technician	17	4.5
	Assistant Technician	5	1.3
	Nurse	70	18.4
	Nursing Assistant	9	2.4
	Pharmacist	17	4.5
	Policy Specialist	41	10.8
	Allied Health Professional	58	15.3
	Other	6	1.6
Work setting	Private Practice	23	3.1
	Government	146	38.4
	Private Sector	207	54.5
	Other	4	1.1
Location within the UAE	Dubai	178	46.8
	Abu Dhabi	105	27.6
	Ajman	32	8.4
	Sharjah	38	10.0
	Umm Al-Quwain	5	1.3
	Fujariah	14	3.7
	Ras al-Khaimah	8	2.1

Multiple Regression

A multiple regression was chosen for the study based on the research questions and hypotheses mentioned earlier in order to find out whether there are any linear relations between two or more IVs and one DV (Tabachnick and Fidell 2007). The revised schematic model below illustrated the investigation of the relations between IVs and DV:

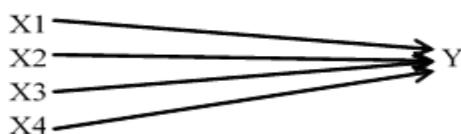


Figure 2: Relations between IVs and DV

Multiple R² and Its Confidence Limits, F Ratio

Reporting of R² was done instead of R, which indicated the % of the variance in DV explained by combined effects of the IVs. The rule of thumb for R² ~ .30 as good relationships with social sciences referenced (Tabachnick and Fidell 2007). With reference Table 2, the Model using the true predictor variables explain about 41.7% of the variance in policy-making.

Table 2 Multiple Regression Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.646 ^a	.417	.411	.59498

Predictors: (Constant), POS, Employment, Work experience, Nationality, Education

b. Dependent Variable: Policy-making Phases

Prediction Equation

The multiple regression formula for the study was as follows:

$$Y (\text{Policy-making process influence}) = A + B(X1) + B(X2) + B(X3) + B(X4) + E$$

Y = the value of the predicted score for the dependent variable

X1 = the value of the first independent variable, Nationality

X2 = the value of the second independent variable, Education

X3 = the value of the third independent variable, Work experience

X4 = the value of the fourth independent variable, POS

b = the regression weight for each variable

a = the constant

e = error (residual)

Based on the regression results, the multiple regression formula is as follows:

$$Y (\text{Policy-making process influence}) = 2.202 + -0.257(X1) + -0.078(X2) + -0.091(X3) + 0.612(X4) + 0.595$$

Overall, the results for RQ1 indicate that nationality strongly related to the policy-making phases. There was a statistical relationship between nationality and each of the policy-making phases. There is evidence to reject the null hypothesis (H₀₁) that is, the data supported the hypothesized relationship between nationality and the combined policy-making phases and concluded there is a relationship between the two variables as hypothesized.

Overall, the results for RQ2 indicate that education was not positively related to the policy-making phases. There is evidence to suggest the failure to reject the null hypothesis (H₀₂), that is, the data did not support the hypothesized relationship between education and the combined policy-making phases.

Overall, the results for RQ3 indicate that work experience was unrelated to the policy-making phases. There was no statistical relationship between work experience and each of the policy-making phases. There is evidence to suggest the failure to reject the null hypothesis (H_{03}), that is, the data did not support the hypothesized relationship between work experience and the policy-making phases.

Overall, the results for RQ4 indicate that POS was moderately related to the policy-making phases. There was a statistical relationship between POS and each of the policy-making phases. There is moderate evidence to reject the null hypothesis (H_{04}), that is, there is some evidence to suggest that POS and each of the policy-making phases and combined are positive monotonically correlated in the population. All the assumptions met in terms of the ratio of cases to IVs and multicollinearity; normality, linearity, and homoscedasticity of residuals; outliers; multiple regression and the prediction equation.

Table 3 Summary of Relationship and Predictors Between Variables and Policy-Making Phase

Spearman's rho (r_s) Correlations		Policy-making Phases	Decision	Regression Outcome Predictor	Model
Nationality	Correlation Coefficient Sig. (2-tailed)	-.230** .000	RQ1: Reject the H_{01}	Least Important Predictor (5%)	
Education	Correlation Coefficient Sig. (2-tailed)	-.184** .000	RQ2: Fail to reject the H_{02}	Some Value Predictor (9%)	
Work Experience	Correlation Coefficient Sig. (2-tailed)	-.023 .657	RQ3: Fail to reject the H_{03}	Little Perceived Value Predictor	
Perceived Organizational Support (POS)	Correlation Coefficient Sig. (2-tailed)	.529** .000	RQ4: Reject the H_{04}	Most Important Predictor (42%)	

** . Correlation is significant at the 0.01 level (2-tailed).

N=380

Adjusted $R^2 = 0.411$

Taken as a whole, when all four variables were included in stage four of the regression model, and according to the all Blocks (Models 1 to 4) only work experience was insignificant as a predictor of policy-making and did not make a significant contribution ($p > .05$). With reference to Table 16, the most important predictor of policy-making was organizational support ($\beta = 0.59$) which uniquely explained the 42% of the variation in policy-making, followed by nationality ($\beta = 0.16$), and education ($\beta = 0.11$). The standardized Beta values also indicated the numbers of SDs scored in the DV would change if there were the 1 SD unit change in the predictor (IV). Together the four independent variables accounted for 56% of the variance in policy-making.

DISCUSSION

Maternal and child mortality in contemporary times remain a foremost challenge to the health systems internationally. According to the WHO, the UAE has been among the world's lowest MCH mortality rates and achieved the targets of MDGs 4 and 5. One of the best practices in achieving

and maintaining the lowered mortality rates is the development and implementation of MCH policies and strategies. The purpose of this correlational research study was to investigate the policies and strategy processes that were used by the health professionals for improving MCH to reduce the child and maternal mortality rates in the UAE. For this research study, the focus was primarily on stages 1 and 2 of the 10-stage continuum of care process which is MCH care. Research studies indicated the need for improving the availability and access to such care through enhanced policies and national budgets, in addition to improving the health promotion and awareness efforts and activities.

Based on a review of many theoretical frameworks, the Andersen model of healthcare services utilization was best fitted for this research study. The Andersen model was to analyze the factors that influence the policy-making process in the area of MCH. From the literature review, there were limited research studies on the MCH policy-making and development process (COHRED 2014; Chapman et al. 2014). Therefore, there was a need to investigate the relationship between Andersen Model factors and the health policy-making process domain. Based on the Andersen Model research literature, the population characteristics within the model has always been of interest to researchers with the main focus on utilization of health services. With reference to the Andersen model, there has been limited evidence from the literature review indicating the correlations between the environment aspect (including the healthcare system and health policy-making process) and the population characteristics.

A logical rationale for the relationships cannot be determined until further research is done. Future research should nonetheless aim to include other factors such as gender, performance appraisals, training, knowledge and innovation, legal frameworks. Institutional structures that may have an influence on the policy-making process as a whole, or at each of the phases of the process. There is a need for ‘future unpacking’ of the healthcare systems and processes to allow for a deeper understanding of the challenges in using the Andersen model. The findings of the study were successful in confirming the future need for a more in-depth understanding of the healthcare systems and processes particularly, policy-making. The results have relevance to social change by developing and generating evidence on how maternal and child mortality rates can be further reduced within the priority countries of the EMR. This can come about through the help of health professionals and practitioners and factors that influence policy in the UAE.

Methodological and Theoretical Implications

The methodological approach of the study considered the evaluation of the representativeness of policy-making as a single occasion assessment. This short-term approach added significantly to understanding in a more in-depth nature. The theoretical implication considered the evaluation of

factors such as nationality, education, and organizational support to be incorporated into the day-to-day aspects of policymakers and decision-makers. The standardized Beta values also indicate that number of SDs that scores in the DV would change if there were the 1 SD unit change in the predictor (IVs). In other words, if we could increase education scores by 1 SD (which is 1.066), the policy-making influence scores would be likely to increase by 0.11 standard deviation units. Therefore, encouraging policy-makers to enhance their training, certifications, and education might be influential in theory.

STUDY LIMITATIONS

One limitation of the study was that health professionals and practitioners had perceptions that their current leadership skills and competencies were being assessed and evaluated in the process of being surveyed; therefore, they may have expressed more textbook theories than the experience of the policy-making process. Efforts were made to acquire participants' involvement via online surveys, taking into account the ethical implications of the online survey research methodology. The advantages of the survey method as the measurement instrument facilitated validity and reliability. This includes being inexpensive; valid for well-constructed and substantiated surveys; superior to measuring attitudes and obtaining insights; and useful for exploration in addition to hypothesis testing research (Christensen et al. 2011; Creswell 2009). Additional limitations resulted from the research techniques employed since correlational research did not indicate causation. The correlational method only uncovered relationships between the IVs and DV and, therefore, did not determine a conclusive reasoning as to why the relationship existed. From the data, some of the IVs, such as nationality and organizational support had a positive effect on the policy-making process. As a result, the data was unable to conclude which variables caused the other. Three ways in which the IVs and DV may causally relate are through a particular IV causing DV (either directly or indirectly); DV causes a particular IV (either directly or indirectly), or a third variable causes both IV and DV. The focus of the study was determining whether or not the IVs had an influence on the policy-making process, rather than revealing which variables influence each other. Therefore, the reasons for the relationships cannot be determined until further research is done.

CONCLUSIONS AND PERSPECTIVES

The research findings suggested that enabling factors such as organizational support, nationality and education had some level of influence in the policy-making process to inform policy and program efforts from the improvement of MCH. However, more research is needed to determine additional factors that influence policy-making. The researchers acknowledged the need for 'future unpacking' of the healthcare systems and processes to allow for a deeper understanding (Walter, Webster, Scott and Emery 2012) and the challenges (Scott and Walter 2010) using the Andersen

Model. The findings of the study were successful in confirming the future need for a deeper understanding of the healthcare systems and processes, particularly policy-making.

A research agenda was addressed from the results of this study, which revealed that there were statistical correlations and that the most significant predictor of policy-making was the organizational support that uniquely explained the 42% of the variation in policy-making, followed by nationality, and education. The research adds value to decision-makers in considering the extent of maternal and child health policy, laws, and regulations that could assist in evaluating the success in realizing current challenges and strategies of health policies and legislation. The research findings could positively influence decision makers' action plans in formulating new guidelines, and public policies and strategies for the development of maternal and child health across the UAE and its regions. Future research should nevertheless aim to include other factors such as gender, performance appraisals, training, knowledge and innovation, legal frameworks and institutional structures that may have an influence on the policy-making process as a whole, or at each of the phases of the policy-making process.

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