

# PRECEDE: A Conceptual Model to Assess Immigrant Health

Loucine M. Huckabay\*

\*Department of Health Science and School of Nursing, California State University, Long Beach,  
1250 Bellflower Blvd., Long Beach CA, 90840 USA.

## CASE REPORT

Please cite this paper as: [Huckabay LM. PRECEDE: A conceptual model to assess immigrant health. Archives of Healthcare \[2023\] 3\[1\]: 40-47.](#)

### \*Corresponding Author:

Loucine M. Huckabay

Department of Health Science and School of Nursing,  
California State University, Long Beach, 1250 Bellflower  
Blvd., Long Beach CA, 90840 USA; Tel: (310) 413-1252;

E-mail: [Lucy.huckabay@csulb.edu](mailto:Lucy.huckabay@csulb.edu)

## ABSTRACT

Immigration to a new country is one of the most important stress-producing events in a person's or a family's life. There are over 40 million immigrants in the United States. This constitutes 13.7% of the United States [US] population. The majority live in large cities of border states, such as New York, Los Angeles, Texas. Immigrants bring with them strengths as well as maladies associated with smoking, infectious diseases and lack of preventive care in their country of origin. It is therefore important to assess and evaluate the health status and health-related practices of the immigrant population to determine areas that need intervention to protect the host country as well as improve the health of the immigrants.

The PRECEDE model provided a comprehensive theoretical framework to develop the Health Status Assessment Questionnaire (HSAQ) to evaluate the health of the Armenian immigrant population (AIP) in the US. The word PRECEDE is an acronym where each letter stands for the following concepts of the theoretical framework:

Predisposing, Reinforcing, Enabling, Causes in Educational Diagnosis Evaluation.

Behavioral causes of the problem are contextual, and they fall into three categories: Predisposing, Enabling and Reinforcing. Predisposing Factors consisted of all the demographic information of the HSAQ including knowledge, attitudes and their willingness to do self-care. The Enabling Factors dealt with the availability, adequacy, accessibility and the skills of the immigrant to access preventive health care such as health insurance, social support, communication systems, and skills of the immigrant to do self-care to comply with his/her diabetic and /or hypertension compliance regimens. Reinforcing Factors dealt with the attitudes and behaviors of the health care workers and helpers within the person's social support system.

The next step of the PRECEDE model is intervention. They are the medical, nursing and other provision of resources by the community, such as social support examples of interventions. Evaluation is the last step of the PRECEDE model. It consists of [1] Process factors such as an immigrant taking responsibility for completing planned activities for his/her health promotion, e.g., going to the doctor to get immunization, or following directions to evaluate blood sugar levels for diabetic. [2] Impacting Factors refer to the achievement of desired behaviors. For example, seeking social support system [3]. Outcome factors: They refer to the end result as to what is good for the immigrants as a whole. For example, lower blood pressures, reduced numbers of acute and chronic illnesses, low depression levels, compliance with diabetic and hypertension compliance. These are all the areas that the HSAQ measured.

In conclusion, The PRECEDE model provides a very



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useful conceptual framework to develop assessment tools to measure the health status of any immigrant groups and plan and intervention strategies.

**Key Words:** PRECEDE, Conceptual model, Armenian, Immigrants, Health status

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## INTRODUCTION

Immigration to a new country is one of the most important stress-producing events in a person's or a family's life. In spite of the challenges imposed by the immigration process, some people immigrate to avoid persecution, war or poverty in their home country. These are known as the "push factors". Others are seeking for new opportunities for a better life. These are the "pull factors" [1].

According to the US Census Bureau [2], there are over 40 million immigrants in the United States [US] and English is a second language for these people. This constitutes 13.7% of the US population. Immigration to the US is one of the most important issues facing not only the federal, state and local governments but also the health care departments of the nation's major cities. The majority [77%] of the immigrants are in this country legally. Immigrants, refugees, and indigenous students, tend to migrate to the border states such as New York, California, Texas and Florida and settle in major cities such as New York City, Los Angeles and San Francisco to find employment [3] or to go to school. As the influx of immigrants continues, the challenges to the health departments of these large cities also increase to meet the health needs of these populations. Immigrants, refugees and indigenous students bring with them strengths as well as their own maladies, such as malnutrition, intestinal parasites, tuberculosis, illnesses associated with smoking and lack of preventive care in their countries of origin [3-5]. Therefore, it is important to assess and evaluate the health status and the health-related practices of the immigrant population to determine areas that need intervention to protect the host country as well as improve the health of the immigrants.

As with any immigrant group, determining and understanding different health-related factors such as demographics, cultural values and practices, and attitudes and how these factors influence health behaviors and health status of populations are important. Additionally, it is essential to evaluate the contextual factors that determine availability and delivery of culturally appropriate care to enable patients and immigrant groups to access care.

The International Center for Migration and Health in Geneva, under the auspices of the World Health Organization [6] has identified in its "Health for All" proclamation strategies and indicators of health for immigrants. Bhattacharya [4] recommends that in order to better understand the health practices and health status of any cultural group, we need to first assess the role of their culture and nationality as influencing factors of health status.

The purpose of this article is to demonstrate the applicability of the conceptual framework known as the PRECEDE model for the development of a comprehensive Health Status Assessment Questionnaire. The word PRECEDE is an acronym where each letter represents a concept of the theoretical framework. PRECEDE stands for Predisposing, Reinforcing, Enabling Causes in Educational Diagnosis and Evaluation. The PRECEDE model is also used as a basis for the methodological study to test the practicality of the health status assessment tool with any immigrant population. The example used in this paper is the Armenian immigrant population.

### The PRECEDE Conceptual Model

The PRECEDE model was originally conceived for use in assessing health promotion and disease prevention behaviors of individuals [7]. The components of the model seem to be comprehensive enough to apply to the assessment of populations in public health settings such as immigrant groups. It also integrates both the WHO [6] and Bhattacharya's [4] recommendations for population assessment. The PRECEDE model is not so all encompassing that it measures every aspect of a specific immigrant group, but it provides a useful framework for identifying variables

for which data are available or can be collected to measure the health status of an immigrant group. The model also provides a means for generating theory-based or research-based assumptions and can be subjected to testing.

The model is applied to the assessment of the Armenian immigrant population (AIP) to the US. There are approximately 1.5 million Armenians living in the US [8, 9] with 200,000 Armenians living in the Los Angeles County [10, 11]. Over hundreds of years of history, Armenian people have been subjected to numerous wars and massacres, more notably the genocide of 1.5 million people at the hands of Turkish Ottoman Empire of 1915, and the most recently in 2020 when Turkey joined forces with the Azerbaijani Government to attack Armenia and its adjacent region of Nagorno-Karabagh. As part of their survival strategy, Armenians have fled to all corners of the world. There are more Armenians in diaspora than in Armenia [8, 9].

According to the PRECEDE model, health or lack thereof, are determined by selected behavioral factors. Health promotion and disease prevention behaviors, such as proper eating habits to control hypertension, diabetes and obesity are examples of behavior patterns that determine health.

### Behavioral Causes of the Problem

Behavioral causes of health problems are contextual in nature and they fall into three categories: predisposing, enabling and reinforcing.

**Predisposing Factors:** They consist of: (1) the demographic characteristics of the person, e.g., the patient's age, height, weight, employment, nationality, socioeconomic status, educational level, home and living conditions, blood pressure, blood glucose level, cholesterol level, medications taken, status of the vision, dental status, nutrition, smoking status etc.; (2) knowledge, attitudes in terms of their willingness to do self-care to control their diabetes or hypertension, perceptions, locus of control and health belief system.

**Enabling Factors:** These are variables that deal with availability, adequacy, accessibility, and the skills of the individual to access preventive health resources, such as health insurance, social support, and communication systems. They also include skills of the person to do self care such as compliance with diabetic and hypertension regimens, performing monthly breast self-examination (for women) and testicular examination (for men), and taking responsibility for their action. This last item was measured by Rotter's [13] Locus of Control tool.

**Reinforcing Factors:** These deal with the attitudes and behaviors of the healthcare providers and helpers within the person's social support system. They are interpersonal and inter-professional support systems that encourage health promotion and disease prevention behaviors. The willingness of the support systems that the immigrant has (friends, relatives, and neighbors) are also part of the reinforcing factors.

The next step in the PRECEDE model is the role of intervention. The PRECEDE model considers medical and

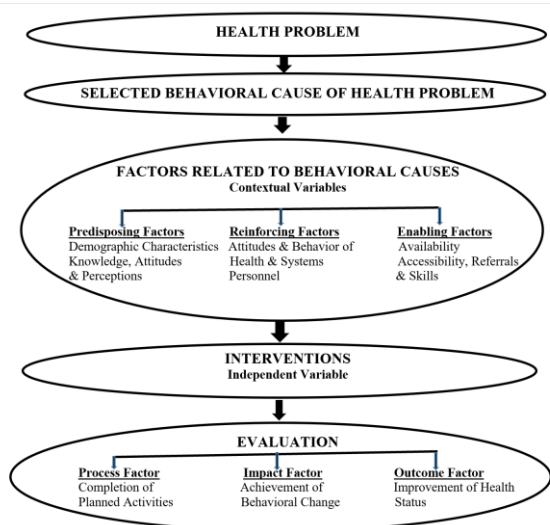


Figure 1: The PRECEDE (Predisposing, Reinforcing and Enabling Causes in Educational Diagnosis and Evaluation) Model  
 Ref: Selby et al. (1989). Improving EPSDT Use: Development and application of practice-based model for public health nursing research.  
 Public Health Nursing. 6(4): 174-181

Figure 1 illustrates diagrammatically the components of the model beginning with the possible causes or different types of contributing factors of health problems in individuals, families, communities and populations, and the role of interventions and the domains of evaluations [12]. The PRECEDE model was used as a conceptual framework and the theoretical underpinnings of the Health Status Assessment Questionnaire to evaluate the health status of the AIP.



nursing interventions as independent variables. Since the methodological study that was done with the AIP was not an interventional study [14], this aspect of the model did not apply at this stage of the study. Hopefully, when deficiencies in health status are identified, interventions can be made. However, in the study that was conducted to measure the health status of the AIP [14] those Armenian immigrants who used the social support systems that were available to them, experienced significantly less depression. Depression was measured using Beck's Depression Inventory [15]. In this situation, if social support is viewed as an intervention to deal with depression, then the PRECEDE model would apply because there was an inverse relationship between those who used their social support system and depression versus those who did not use their social support system. Social support systems served as a buffering mechanism to deal with the acculturative stress experienced by the AIP. The outcome factor would be better mental health as measured by less depression for those who use their social support system in time of need.

## Evaluation

Evaluation is the last component of the PRECEDE model. It follows and measures the effect of intervention. It has three parts: Evaluation of Process, Impact and Outcome Factors.

**Process Factors:** They deal with the immigrant taking responsibility for completing planned activities for his/her health promoting behaviors, such as performing monthly breast self-examination (BSE) (for women), receiving immunizations for the prevention of influenza and pneumonia, seeking timely preventive services to treat acute and chronic illnesses, and seeking social support systems that are available in their community or through friends and relatives.

**Impacting Factors:** They refer to the achievement of desired behavioral changes. For those AIP who used their social support system to deal with the challenges and stressors of immigration, the impacting factor would be a lower level of depression in comparison with those who did not use their available social support system. This was

indeed the case [14]. Another example of the impacting factor would be, if teaching was done on how to perform BSE, and the participant actually continued performing monthly BSE to detect any possible abnormalities in the breast early on, this would constitute the impacting factor of teaching. Thus, in this example, we would say that teaching has had an impact, which then affects and determines the health status of the AIP. The improvement of health status of the immigrants is the outcome factor.

To date, the main outcome factors that the instrument measured to determine the health status of the immigrants were as follows:

1. The blood pressure of the immigrants to determine the incidences of hypertension.
2. The incidences of acute (e.g. flu) and chronic illnesses (e.g. diabetes).
3. Compliance with diabetic and/or hypertension regimens.
4. The Incidences of smoking and alcohol consumption.
5. The degree of social support used.

The study also used the Beck's Depression Inventory and Rotter's Locus of Control tool with the AIP to determine their relationship to the above-mentioned five different outcome measures that were imbedded in the 109 item Health Status Assessment Questionnaire.

## Application of the PRECEDE Model to the Health Status Assessment Questionnaire for AIP

The Health Status Assessment Questionnaire [HSAQ] consisted of 109 items that were based upon the different constructs of the PRECEDE model.

The following demographic data about the immigrant assessed the Predisposing Factors: age, height, weight, gender, marital status, religion, educational levels, and number of children, languages spoken, country of origin, occupation, employment status, and housing and living conditions. Information related to health promotion-types of behaviors fall into several factors. For example, "When was your last mammogram?" is a piece of demographic data and it belongs to the predisposing factor.

"Why is it necessary to do breast self examination?" is a knowledge type question. It is also classified as a predisposing factor.

"Do you do monthly breast self-examination?" is an evaluative factor that measures behavior (impact factor). The same format of asking questions was used to assess hypertension, diabetes, dental care, nutrition, smoking behaviors, immunizations, medications, physical activities, and weight management.

With respect to compliance with diabetes and hypertension, the following questions were asked: "Circle the number that best describes the extent to which you follow the doctor's or nurse's instruction related to your diabetes (or hypertension)?" Each question ranged from "1" referring to always, "3" referring to never, or "NA" as not applicable. Compliance for diabetes tapped the following areas:

1. Keeping on the diet
2. Exercising
3. Testing urine for sugar
4. Testing blood glucose
5. Taking medications
6. Giving insulin injections
7. Visiting the doctor/nurse regularly

Since there were seven items, each ranging from "1" indicating compliance to "3" indicating non-compliance, the total score could range from 7 indicating total compliance to 21 indicating total non-compliance.

Compliance with the hypertension regiments was assessed via the following six questions:

1. Keeping on the diet
2. Exercise
3. Taking medications
4. Checking blood pressure
5. Weight control
6. Visiting the doctor or the nurse

Since there were six questions, each ranging from 1 indicating "compliance" to 3 indicating "non-compliance", the total score could range from 6 (full compliance) to 18

(full non-compliance). These questions tap the predisposing factor (knowledge of how to test blood glucose), the enabling factor (able to access the doctor), as well as the evaluation of the process (whether or not they do the expected behaviors), and the determination of their health status in these domains.

The HSAQ also assessed the immigrant's incidences of acute and chronic illnesses. Acute illnesses were of two types: [1] those that the immigrant had experienced within the last six months, such as flu, sore throat, skin rashes, broken bones, fever, car accident, vomiting, and diarrhea, [2] those illnesses that were experienced within the past seven days, e.g., headaches, falls, shortness of breath at rest, abdominal or stomach pain, backache or muscular pain, and dizziness. There were a total of 15 items, each ranging from zero indicating no incidences of acute illnesses to 4 indicating four or more times during the past week or the past six months. Since there were 15 items each ranging from 1 to 4, the total score on the incidences of acute illnesses could range from zero (no acute illnesses) to 60 (very high incidences of acute illnesses).

With respect to the incidences of chronic illnesses, there were a total of eight conditions. They were arthritis, cancer, diabetes, hypertension, heart problems, lung disease, mental disorder and other (specify). The scoring was done by adding the total number of chronic illnesses the immigrant reported. Since there were eight conditions, the total score could range from zero, indicating no chronic illnesses to eight, very high incidences of chronic illnesses.

The Social Support (SS) questionnaire consisted of six questions. It asked such questions as the number of friends or relatives they have that they can call upon for help, the types of help they needed and the frequency of the contact they had with the social support person. Five of the questions were on a 5-point Likert-type rating scale, with 1 (lowest SS) to 5 (highest SS). The sixth question had four options from which the participant had to select one. This last question was worth one point. The total score could range from 6 to 26.

## Psychometric Properties of the Health /status Assessment Questionnaire

The validity of the HSAQ was established by three methods: Construct validity, content validity, and validity through the panel of expert judges. The construct validity of the questionnaire was based on having the PRECEDE conceptual model serve as the tool's foundational underpinnings. Every question item was based on one aspect of the PRECEDE model as described previously.

The content validity was established by backing with literature [16-19]. Each of the items of the questionnaire were taken from numerous studies and conceptual frameworks indicating that collectively the comprehensive list of the 109 items of the HSAQ tapped different aspects of an immigrant's health status. The third method of establishing validity was through a panel of three expert judges who possessed Ph.D. degrees in Community Health and Epidemiology. The percent agreement between the judges was 98%.

The reliability of the HSAQ was established by the test-retest method. Ten immigrants were asked to answer the same questionnaire two weeks later. The percent agreement between test retest was 95%.

Both Beck Depression Inventory and Rotter's Locus of Control tools have been used in numerous studies and their psychometric properties have been well established [13, 15, 20].

## LIMITATIONS OF THE STUDY

This research is subject to the following limitations in generalizing the results. Selection bias due to the convenience sample in one large Los Angeles county location. Response bias due to self-reporting of various behaviors could have occurred, though self-report of behaviors in social science research is an accepted data collection method. One researcher translated the surveys completed in Armenian.

## SUGGESTIONS FOR FUTURE RESEARCH

1. Replicate the study using the same Health Status Assessment questionnaire with other cultures and groups of immigrants to refine the tool further and make its use and findings based on this assessment tool more generalizable.

2. Translation of the Health Status Assessment tool into other languages and establishment of its psychometric properties can enable the comparison of different types of immigrants with respect to their acculturation processes, health status and areas that they need help.

## SUMMARY AND CONCLUSION

Assessment of any immigrant population's health status is a challenging endeavor. The PRECEDE conceptual model was used as the theoretical framework underpinning the major components of the health assessment of a specific group of immigrant population namely the AIP. The PRECEDE model views any health problem to be the result of selected behavioral causes. There are factors that contribute to the behavioral causes of the problem. These factors are referred to as contextual variables that manifest themselves in three ways: first, as predisposing factors, such as demographics; second, as enabling factors that determine the availability, accessibility, referrals and skills; third, as the reinforcing factors, which are the attitudes and behaviors of the health care system's personnel. Once assessments of these contextual variables are done, and their roles determined, interventions can be instituted, which are the independent variables. The PRECEDE model concludes with the evaluation of the intervention from three perspectives—Process factors as in completion of planned activities; Impact factors referring to the behavioral changes that have taken place as a result the intervention, and finally, the outcome factors, referring to the overall improvement of the health status of the immigrant population.

The psychometric properties of the HSAQ were established in terms of their validity and reliability. Validity was established by three methods: Construct validity based





on the PRECEDE model, content validity by backing with the existing literature and validity by a panel of three expert judges amongst whom 98% agreement was obtained. Test-retest reliability yielded 95% agreement between the two tests. There test was done two weeks after initial testing.

In conclusion, the PRECEDE model provided a very useful conceptual framework for developing a comprehensive assessment tool to measure the health status of the AIP. The same conceptual framework and the same HSAQ can be used to assess the health status of similar immigrant groups.

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Not commissioned. Externally peer reviewed.

