
*The World's Largest Open Access Agricultural & Applied Economics Digital Library*

**This document is discoverable and free to researchers across the globe due to the work of AgEcon Search.**

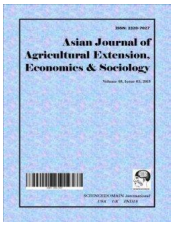
**Help ensure our sustainability.**

Give to AgEcon Search

AgEcon Search
http://ageconsearch.umn.edu
aesearch@umn.edu

*Papers downloaded from **AgEcon Search** may be used for non-commercial purposes and personal study only. No other use, including posting to another Internet site, is permitted without permission from the copyright owner (not AgEcon Search), or as allowed under the provisions of Fair Use, U.S. Copyright Act, Title 17 U.S.C.*

*No endorsement of AgEcon Search or its fundraising activities by the author(s) of the following work or their employer(s) is intended or implied.*



*Asian Journal of Agricultural Extension, Economics & Sociology*
*6(1): 1-15, 2015; Article no.AJAEES.2015.057*
*ISSN: 2320-7027*

**SCIENCEDOMAIN** *international*
www.sciencedomain.org

# Measurement of Socioeconomic Status in Iran: A Systematic Review

**Mina Mahdavian[1] and Hossein Safizadeh[2*]**

*[1]Research Center for Modeling in Health, Institute for Futures Studies in Health, Kerman University of Medical Sciences, Kerman, Iran.*
*[2]Research Center for Social Determinants of Health, Institute for Futures Studies in Health, Kerman University of Medical Sciences, Kerman, Iran.*

***Authors' contributions***

*This work was carried out in collaboration between both authors. Authors MM and HS designed the study. Author MM wrote the protocol and supervised the work. Author HS managed the analyses of the study. Author MM wrote the first draft of the manuscript. Author MM managed the literature searches and edited the manuscript. Both authors read and approved the final manuscript.*

***Article Information***

DOI: 10.9734/AJAEES/2015/16756
Editor(s):
(1) Angel Paniagua Mazorra, Centre for Human and Social Sciences, Spanish Council for Scientific Research, Spain.
Reviewers:
(1) Ibtissam Sabbah, Faculty of Public Health V, Lebanese University, Lebanon.
(2) Rejani T.G, Institute of Behavioural Sciences, Gujarat Forensic Sciences University, India.
Complete Peer review History: http://www.sciencedomain.org/review-history.php?iid=1057&id=25&aid=8510

***Review Article***

***Received 12th February 2015***
***Accepted 7th March 2015***
***Published 18th March 2015***

## ABSTRACT

**Aims:** The socioeconomic status is considered to be a multi-dimensional indicator, and there is no definite standard to measure it.The aim of the present study is to perform a systematic review to evaluate whether there are the same indicators for measuring socioeconomic status in the published articles in the medical sociology in Iran.
**Study Design:** Systematic Review.
**Methodology:** We searched the English language literature on socioeconomic status in health researches in Iran between 1990 and October 2014: MEDLINE using PubMed, Scopus, Web of Science, and Science Direct. In addition, we searched these Iranian electronic databases: Iranian Scientific Information Database (SID) and IranMedex.
**Results:** Our finding indicated the three factors – education, occupation, and income – were the dominant indicators for measuring socioeconomic status in both English and Persian articles. Only four studies (English articles) had composite measure and made a standard indicator in their

**Corresponding author: E-mail: hsafizade@kmu.ac.ir;*

studies. Eleven studies had no clear categories for measuring socioeconomic indicators.
**Conclusion:** We encountered various definitions and indicators, mostly because of poor quality of the studies with diversity in methods and populations.

*Keywords: Socioeconomic status; classification; indicator; health research; systematic review; health disparities.*

## 1. INTRODUCTION

The socioeconomic status is important and determines health risk factors in every society. It also has effect on the actual access and utilization of various available health facilities [1]. The socioeconomic status (SES) is considered to be a complicated and multi-dimensional indicator, and there is no definite standard to measure it. The first constituent of the socioeconomic status includes the social class of people, which indicates whether a person has an acceptable social position or not. Generally, education is considered as a representative of a social class of people. The educational level is measured with different scales, such as binary scale (literate / illiterate), numeric scale (years of education), and highest educational level (categorical). The other aspects of the social class of people are much more complex to be approach [2]. The second constituent of SES covers affluence and proceeds of people; however, this component has no clear definition. The indicators, such as income, property, and possessions of the individual or the household, might also be measured [3]. SES was identified by Mueller and Parcel in 1981 as an individual's or group's within a hierarchal social structure based on their access to wealth, prestige, and power [4].

The members of society vary in the way of their usual access to jobs, assets, income, and power. Despite the fact that the impacts of SES on health are well known, the measurement of SES in health studies has several methodological and analytical issues [2]. One of them is lack of accuracy and reliability of measures. In addition, gathering individual SES data (e.g., high proportion of non-response for income variables) and categorizing of children, women, the retired, and unemployed can be conducted with difficulties. Finally, Weak correlation between individual SES measure among some groups (i.e., income, education, and occupation) leads to the inaccurate results.

Regarding to the impact of factors on the health status and health disparities, socioeconomic status implicatesas a frequent contributor in some population [5]. To put it simply, differences in health status of individuals with different socioeconomic statusinfluence on the health. For example, a low socioeconomic status raises cardiovascular risk of US population, in European countries cancer mainly associated withlow level of socioeconomic status, however [6].

Various studies have defined several indicators for measuring socioeconomic status. Selecting the best variables and approaches for assessing SES should be dependent on consideration of the relevance of the measurements for the target groups and the outcomes under study. There is no doubt that there are several factors for defining the socioeconomic status, which is variable from one study to another [7-9]. Even though the number of studies has explained about socioeconomic status indicators, no systematic review was available in the literature of medical sociology to signify how various it is and which indicators are applicable.The systematic Review studies are considered as the strongest and the most valid type of medical studies [10]. For the considerable amount of data we encounter,one of the best methods for policy makers is systematic review [11].

The aim of the present study is to perform a systematic review to evaluate whether there are the same indicators for measuring socioeconomic status in the published articles in the medical sociology in Iran.

## 2. METHODOLOGY

### 2.1 Data Sources / Search Strategy

In order to review the English language literature on socioeconomic status in health researches in Iran between 1990 and December 2014, we searched the following English electronic databases: MEDLINE using PubMed, Scopus, Web of Science, and Science Direct. In addition, we searched these Iranian electronic databases

with Persian language: Iranian Scientific Information Database (SID), and IranMedex. The searches of articles were undertaken between Dec30 and 31, 2014. The Authors also scrutinized reference lists of included articles (no articles were added). For additional articles, we conducted the supplementary search in Google and Google scholar(no articles were added).

### 2.2 Search Terms and Strategy

We searched these English terms (MESH terms) and their corresponding Persian equivalents: "Socioeconomic Status", "Status, Socioeconomic", "Socioeconomic Factor", "Factors, and Socioeconomic", and "Factor, Socioeconomic". Each of these words was combined with "OR" and then combined, using "AND", with Iran OR Iranian OR Farsi OR Persian.

### 2.3 Inclusion / Exclusion Criteria

The authors considered all types of original studies (on adults and children), i.e., clinical trials, longitudinal, cohort, case-control, ecology, systematic review, and cross-sectional studies. Letters, reports, conference papers, organizational reports, opinions, or editorial papers were excluded. All studies addressed socioeconomic status whether it was the main subject or not. The studies did not mention clear socioeconomic definitions and categories were excluded.

### 2.4 Selection, Reading, and Information Extraction

In the next step, all citations that reported the socioeconomic status were reviewed. One author independently was selected and reviewed the articles by following these stages; inclusion and exclusion criteria were assessed both in reading the titles and the abstracts of search results. The author read to determine the final articles, and the duplicated articles were eliminated. After that, the data extraction tables were completed for each article using these characteristics: sample size, unit of observations, study design / measurement tool, category of socioeconomic status, definitions of socioeconomic measures, first author, year, and also language. Then, we found all full-texts of the articles selected, and the exclusion criteria were also applied to the full-texts.

## 3. RESULTS AND DISCUSSION

### 3.1 Search Results

The database search identified 309 articles in English and Persian. Primarily, 257 studies were identified in English and Persian biomedical databases respectively after eliminating the duplicated articles (Fig. 1). In the next step, of the 249 studies, 180 were of no relevance to the current review according to their abstracts and titles. In the full text evaluation step, 25 studies did not have distinct socioeconomic definitions and categories; they were omitted. Finally, 46 articles that had the criteria of the study were selected.

### 3.2 Characteristics of Included Studies

The time restricted was from 1990 to 2014. Four studies (8.7%) were written in Persianand42 (91.30%) were in English. Forty three study designs (93.48%) were cross-sectional, and 6.52% of them were of other types, such as case-control and cohort studies. Most studies (39out of 46) measured socioeconomic status by questionnaire, whereas 15.21% used interview. Adults and patients were the most frequent populations under observation (29 studies; 63.04%). Detailed characteristics of studies on types of socioeconomic status, their definitions, sample size, units of observation, study designs, first author, year and language are presented in Table 1.

### 3.3 Socioeconomic Status Definitions and Indicators

All studies provided their definitions for socioeconomic status, but they used different definitions and categories. The most common indicators of socioeconomic status were education (63.04%), Occupation (45.65%), and Income (28.26%) (Fig. 2).

#### 3.3.1 Composite measurements and scales

In order to construct socioeconomic status, four articles used composite measures (Table 2). One article used principal component analysis with three variables: women's occupation, her husband's occupation, and family's income. Then, persons were categorized into low, intermediate, and high socioeconomic statuses [12]. One other study used multiple correspondence analyses and created wealth

score based on the appliance ownership variables [13]. The third study used social class with the scores obtained from parents' occupational status, parents' educational level, and family's income [14] Another study, for measuring socioeconomic status, computed parents' education and their occupational status using the four-factor Hollingshead index based on the Hollingshead criteria [15].

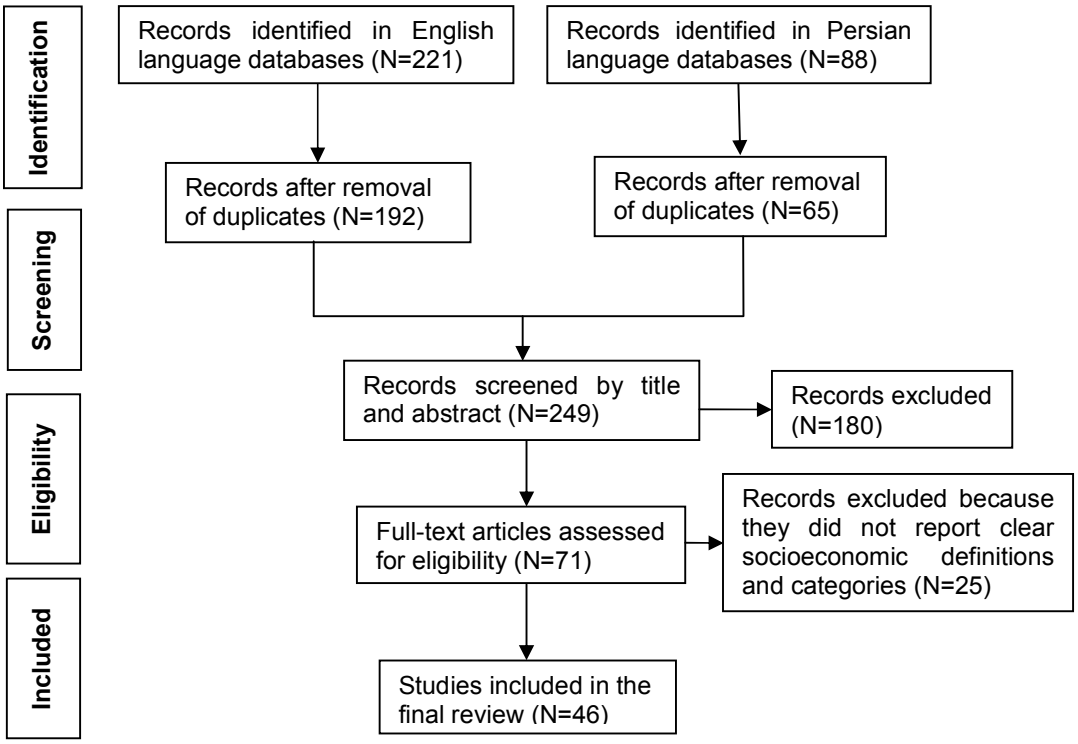



**Fig. 1. Search process and number of eligible studies**

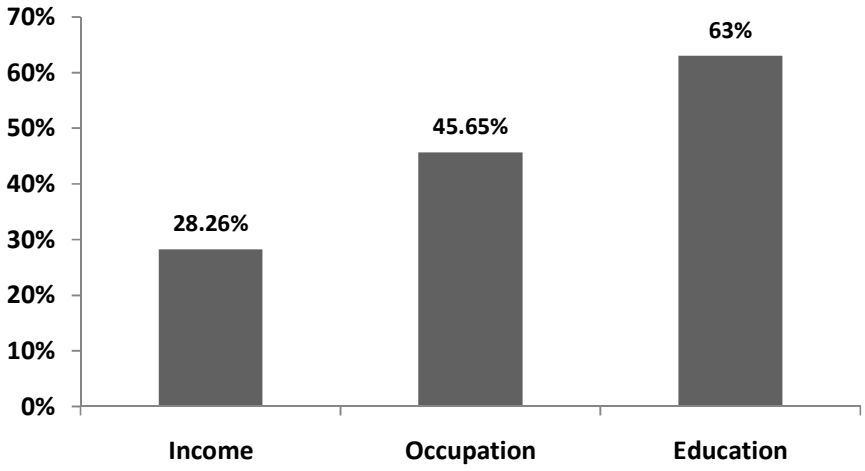



**Fig. 2. Percentage of most common SES indicators**

**Table 1. Detailed characteristics of studies on socioeconomic status, their definitions, sample sizes, units of observation, and study designs**

| First author | Year | Units of observation | Sample size | Design/detecting method | Socioeconomic status definition | Language | Category of socioeconomic status |
|---|---|---|---|---|---|---|---|
| Yavari [52] | 2007 | Adults | 606 | Case control questionnaire | Education level, Employment status, Husband's job, Family size, Average monthly income | English (E) | Education level(Primary or lower, Middleschool, High school, College or University),Employment status(Housewife ,Employed),Husband's job(Labor, Clerk, Self-employed, Retired ,Unemployed)Family size(<= 3,6-4,>=7),Average monthly income(Low, Intermediate, High) |
| Samim [27] | 2007 | Adults | 360 | Cross sectional questionnaire | Education, Job | Persian (P) | Education(Illiterate to PhD) Job(workers to professional) |
| Riahi [29] | 2007 | Adults | 10944 | Cross sectional questionnaire | Education, Income, Job | P | Low, Middle, high |
| Serajzadeh [31] | 2007 | Adults | 5231 | Cross sectional questionnaire | Education, Income, Father's job | P | Low, Middle, High |
| Kalaki [30] | 2008 | Adults | 376 | Cross sectional questionnaire | Job, Education, Income | E | Education(Illiterate, Primary, Highschool, Diploma, Post diploma, Bachelor, Master) Job (Unemployment, Very low job position, Low job position, Middle job position, High job position, Very high job position,) Income(below 450,453-755,758-1059,1062-1364,1655 and moreUSD Dollar)*[1] |
| Montazeri [33] | 2008 | Adults | 4163 | Cross sectional questionnaires | Educational level | E | Educational level(No education, First level (1–5),Second level (6–9),Third level (10–12),Fourth level (>12)) |
| Fazel [44] | 2008 | Children | 1016 | Cross sectional questionnaire | Income | P | Monthly income |
| Shahraki [35] | 2008 | Adults | 888 | Cross sectional interview | Educational level | E | Educational level (years) |
| Roohafza [16] | 2009 | Adults | 17593 | Cross sectional questionnaire | Occupation status, Educational level | E | Man's job (Manual, Non-manual worker, Unemployed, Retired) Woman's job(Manual workers, Housewives, Non manual Education level(Years of education) |

[1]*Income amount was converted to US dollars according to the currency ofCentral Bank of the Islamic Republic of Iran (March 2015)*

| First author | Year | Units of observation | Sample size | Design/detecting method | Socioeconomic status definition | Language | Category of socioeconomic status |
|---|---|---|---|---|---|---|---|
| Nouraie [49] | Adults | 2561 | Cross sectional questionnaire | | Parents education, Number of household | E | Parents' education(Illiterate, Primary school, Higher education) Number of household(2-4,5-7, more than 7) |
| Mirhosseini [14] | 2009 | High school students | 622 | Cross sectional questionnaire | Social class | E | Parents' occupational status, Parents' educational level, Family's income |
| Poorasel [26] | 2009 | Adults | 1785 | Cross sectional questionnaire | Parents' education, Father's occupation | E | High, Middle, Low |
| Esmaeily [20] | 2009 | Adults | 4977 | Cross sectional questionnaire | Educational attainment, Occupational status | E | Administrative workers, Manual workers, House wife student, Retired, Unemployment) parent's education( Illiterate<12 years,= 12 years,>12 years) |
| Azimi-Nezhad [22] | 2009 | Adults | 405 | Cross sectional questionnaire | Educational attainment, Occupational category | E | Educational attainment(Illiterate, Under diploma, Diploma, University) Occupational category(Worker, Staff, Student, Housewife, Retired or disabled, Unemployed) |
| Shiva [56] | 2009 | Children | 647 | Cross sectional Structured questionnaire | Father's occupation | E | Father's occupation(Professionals, Manager, Government employee, Skilled workers, Labors, Farmhands, Unemployed) |
| Abbasi-moghadam [34] | 2009 | Adults | 5600 | Cross sectional questionnaire | Education | E | Education(Illiterate, Schooling, Highschool, Diploma, University) |
| Mohammadzadeh [48] | 2010 | Children | 240 | Cross sectional questionnaire | Economic status, Education level of parents, Living place | E | Economic status(Good, Medium, Low) Education level(Illiberal or primary, Middleschool, Diploma, Graduated, Post graduated and doctor) Living place(Rural, Urban) |
| Rezazadeh [54] | 2010 | Women | 460 | Cross sectional questionnaire | University degree, Employment status, Own house, Total family income | E | University degree(yes, no),Employment status(Employed, Unemployed),own house(yes, no) |
| Sohrabi [57] | 2010 | Adults | 1436 | Cross sectional questionnaire | Parent's highest education, Father's job, Having a personal room | E | Parent's highest education(No education, High school, Above high school diploma, Bachelor's degree or higher),Father's job(No job, Having a job,)Having a personal room (yes, no) |

| First author | Year | Units of observation | Sample size | Design/detecting method | Socioeconomic status definition | Language | Category of socioeconomic status |
|---|---|---|---|---|---|---|---|
| Ahmadian [45] | 2010 | Adults | 400 | Cross sectional questionnaire | Education level, Occupation, Monthly income, Insurance status | E | Education (No formal education ,Primary and secondary, Graduate) ,Occupation(Full time & Part Time Employee, Unemployed &Housewives)Income(High, Middle, Low) Insurance(Insured, Non-insured) |
| Shayeghi [37] | 2010 | Pupils | 500 | Cross sectional questionnaire | Parents' education | E | Parent's education(Uneducated, Primary, Guidance school, High school and upper) |
| Bahonar [28] | 2011 | Adults | 12,514 | Cross sectional questionnaire | Education, Occupation, Income | E | Education(Illiterate, Elementary, High school and university) Occupation(Government, Private sector and Unemployed) Income level (Iranian central bank for Iranian family) |
| Golozar [13] | 2011 | Adults | 50044 | Cohort study questionnaire | Wealth score | E | appliance ownership variables including :Personal car, vacuum cleaner, color TV |
| Donyavi [18] | 2011 | Patients | 664 | Cross sectional Interview | Education, Employment | E | Education(years =0,1-5,6-9,10-12 more 12) Employment(Housewife, Unemployed, Employed, Retired) |
| Razmi [32] | 2011 | adolescent | 363 | Cross sectional questionnaire | Parents' education | E | Father education(Graduate and above, Secondary school, Primary and middle school, Illiterate) Mother education(Secondary school, Primary and middle school, Illiterate) |
| Amanlou [21] | 2011 | Children | 205 | Cross sectional questionnaire | Education, Occupation | E | Father's occupation(Unskilled worker, Staff member, Self-employed, Employers/professional) Mother's occupation |
| Khalaj [51] | 2011 | Women | 1378 | Cross sectional questionnaire | Father's monthly income, Family residence, parents education | E | Father's monthly income low (99 Dollar or less), medium (100 - 165) or high (1655 or more more), Family residence(living in Tehran or not),Parent's education(Illiterate to university degree) |
| Gharipour [40] | 2011 | Adults | 12600 | Cross sectional questionnaire | Place of residence, Occupation, Education, Income | E | Place of Residence(Urban, Rural),Occupation(Public, Private, Housewife, Students, Retired),Education(0–5 year,6–12 year,>12 year) |
| Roohafza [53] | 2011 | Adults | 9572 | Cross sectional questionnaire | Place of residence, Educational level | E | Place of residence(urban, rural),Educational level(6-12 years,≥ 12 years) |
| Ahmadi [38] | 2012 | Patients | 112 | Cross sectional questionnaire | Place of living, Education, Economic status, Occupation | E | Place of living(Urban, Rural), Education(Illiterate, Primary school, University or higher), Economic status(Good, Fair, Weak),Occupation(Unemployed, Member of staff, Housewife, Workman, Business, Farmer) |

| First author | Year | Units of observation | Sample size | Design/detecting method | Socioeconomic status definition | Language | Category of socioeconomic status |
|---|---|---|---|---|---|---|---|
| Vahabi [17] | 2012 | Students | 810 | Cross sectional questionnaire | Parents' job, Parents' education | E | Father job(government, private, labor),Mothers' job(Employed, Housewife),Mother's education(Uneducated, Initial education, University),Father's education(Illiterate, Initial education, University) |
| Mahjoubi [19] | 2012 | Patients | 96 | Cross sectional questionnaire | Occupational status, Educational level | E | Occupational status (Full-time Job, Part-time Job, Retired, Unemployed),Educational level(Not a high school graduate, High school graduate, College graduate) |
| Esmaeil-zadeh [15] | 2012 | Children | 766 | Cross sectional questionnaire | Parental occupation, Education level | E | Four-factor Hollingshead index based on the Hollingshead criteria |
| Behzadnia [23] | 2012 | Adults | 653 | Cross sectional questionnaire | Parents educational level, Occupation, | E | Parents' educational level(Illiterate, Elementary level, Diploma or advanced diploma, Bachelor of Science or Academic Degree) |
| Taghavi [43] | 2012 | Children | 600 | Case control interview | Monthly salary | E | Monthly salary(Dollar) <250,250-400,401-550,>550 |
| Shekarchi-zadeh [24] | 2012 | Patients | 810 | Cross sectional interview | Education status, Job status (in the last 3 months) | E | Education status(Illiterate, Elementary school, Highschool, University), Job status (Full time job, Unemployed, Student, Retired, Part time job, Homemaker) |
| Sehat [25] | 2012 | Adults | 64200 | Cross sectional questionnaire | Education, Job | E | Education(Illiterate,<Diploma, Diploma,>Diploma) Job(Employed, Unemployed, Retired, Student, Housewife) |
| Shahraki [36] | 2012 | Adults | 811 | Cross sectional interview | Education | E | Education(years=>12,≤12) |
| Davoudi-Monfared [46] | 2012 | Patients | 520 | Cross sectional questionnaire | Education, Occupation, Income, Health insurance status | E | Education(illiterate, Diploma and less, academic), Occupation(Employed, Unemployed, Retired, Housewife) Income(132 or less,165-331 more than 331 Dollar), Health insurance status (Yes, No) |
| Memar [41] | 2012 | Children | 113 | Cross sectional interview | education, Household income | E | Education (very low, low, medium, high), Household income (Poverty level <100%,100–200%,200–300%,300%>) |
| Bakhtiyrari [47] | 2013 | Young adults | 1782 | Cross sectional questionnaire | Parental level of education, House space, House price, Having personal car, | E | Low ,Middle, Good, Excellent |

| First author | Year | Units of observation | Sample size | Design/detecting method | Socioeconomic status definition | Language | Category of socioeconomic status |
|---|---|---|---|---|---|---|---|
| | | | | | computer | | |
| Ramim [39] | 2013 | Married women | 35 | Cross sectional questionnaire | Living place, Education, Occupation, Income | E | Education(Elementary, Lower than high school, Highschool, More than high school occupation(Housekeeper, employee),Income (30 or less,33-66 ,67-99, more than 100) |
| Ebrahimi [50] | 2013 | Pregnant women | 308 | Cross sectional questionnaire | Education, Income, Occupation, Household size | E | Husband's occupation(Government employee, Small business, Farmer, Unskilled worker, Unemployed),Employment status of women(Working, Housewife),Income(less than 99, 100- 198,202-298,301-397) |
| Abdolahi [12] | 2013 | Menopausal women | 804 | Cross sectional questionnaire | Women's occupation, Husband's occupation, Family's income | E | Low, Moderate, High |
| Eslami [42] | 2013 | Patients | 347 | Cross sectional questionnaire | Education, Annual income | E | Education(Illiterate/some informal education, Primary school/similar, Secondary/high school/similar, University/similar), Annual income(<48,48–72,72.1–96,>96 million Rials) |
| Shishegar [55] | 2014 | Pregnant women | 210 | Cross sectional questionnaire | Current marital status, Woman's occupation, Husband occupation, Family income, Place of residence, Number of people per household, Cost per square meter of house, Leisure and facilities | E | Occupation(Low class job, Medium class job, High class job) Income (120 or less,130-264,270 or more) Education(under a diploma, academic education), Facilities and leisure (having a private car and computer), Place of residence (Rural, Urban) |

### 3.3.2 Occupation, education

Twelve out of 46(26.08%) studies used occupation status and educational level for measuring socioeconomic status [16-27] (Table 3). For measuring job, eight studies divided job into several number categories (three, four, five, six) [16,17,19,21-24,27]. Moreover, two studies used parent's job [20-21]. Only one study divided the range job form workers into professionals [27]. In addition, one study mentioned no clear measurement for job category [17]. For education, eight studies measured educational level based on various categories, such as illiterate to university education, illiterate to PhD, illiterate to diploma, and parents' education [17,19,21-24,27]. Whereas four studies used years of education [16,18,20-21].

### 3.3.3 Education, occupation, and income

Four studies (8.7%) used education, occupation, and income for the socioeconomic status definitions [28-31] (Table 3). Two of which classified education into different number categories (four and seven) [28,30]. In the reviewed articles, two of them mentioned no specific criteria for measuring education [29,31]. Similarly about occupation, one of the articles divided it into six categories [30]. Furthermore, three studies had no clear definition for measuring occupation [29,31]. For measuring income, one study chose the Iranian central bank indictor [28]; another study classified it into six categories based on the Iranian currency (Rial) [30]. Two studies did not use clear definition for this index [29,31].

### 3.3.4 Education

Six studies used only educational level for measuring socioeconomic status [32-37] (Table 3). Two of them used parental educational level [32,37]. The two other studies used level of education as a socioeconomic indicator [33,34]. Two studies divided years of education [35,36].

**Table 2. Composite measurements with their variables**

| Socioeconomic status definition | Category of socioeconomic status | # Refences |
|---|---|---|
| Women's occupation, husband's occupation, family's income | Low, intermediate, and high | Abdolahi [12] |
| Parents' occupational status, parents' educational level, and family's income | Social class | Mirhosseini[14] |
| Appliance ownership including : Personal car, vacuum cleaner, color TV | Wealth score | Golozar[13] |
| Parents' education and their occupational status | Four-factor Hollingshead index based on the Hollingshead criteria | Esmaeilzadeh[15] |

**Table 3. Most frequent* parameters of socioeconomic status with the classification, number of studies, and publication year**

| Most frequent parameters of SES (# of studies) | Classification of each parameters(indicators) | # of studies | Publication years | # Refences |
|---|---|---|---|---|
| Occupation ,Education | Occupation : from labor to unemployment(such as) Educational level from Illiterate to PhD | 12 | 2007-2012 | [16-27] |
| Education | Educational years | 6 | 2008-2012 | [32-37] |
| Education, Income, Occupation | Education: from illiterate to master such as) Income: Monthly income Occupation: from unemployment to very high job position such as) | 4 | 2007-2011 | [28-31] |

**studies with four or more than frequent of parameters of socioeconomic status were considered as a frequent*

#### 3.3.5 Living place, education, occupation, and income

Three studies measured socioeconomic status based on living place, education, occupation, and income [38-40] (Table 1). Living place in one article was not available [39]. Two studies used living place based on the rural and urban residence [38,40]. For education, two studies divided education into four and three categories [38,39]. One study measured the years of education [40]. Occupation indicator had different number categories (six, five, and two) [38-40]. For measuring income, only one study divided it into four categories based on Rial [39]. One study measured the income as economic status based on the three categories: good, fair, weak [38]. In one study, the income as economic status was not available [40].

#### 3.3.6 Education and income

Two studies measured income and education as socioeconomic indicators [41,42] (Table 3). One article divided education and income into four categories [42]. Another study used four categories for educational level and income based on the poverty level [41].

#### 3.3.7 Income

Two articles used only income for socioeconomic status [43,44] (Table 1).Among them, one study used monthly income [44]. Another study calculated this indicator base on dollar [43].

#### 3.3.8 Education, occupation, income, and insurance status

Two studies measured four indicators, such as education, occupation, income, and insurance status [45,46] (Table 1). Two articles classified education and occupation into different categories (four and three groups) [45,46]. For income, monthly income was used for one study [45], and one study divided it into four categories [46]. Insurance status was similar in the articles. It measured nominal scale as yes or no [45,46]. In the other studies, outspread indicators, which cannot be categorized as above, were used [47-57] (Table 1).

### 3.4 Discussion

All of the studies mentioned that socioeconomic status is contingent on various indicators, which means that there is lack of a gold standard in health literature in Iran. We found that results indicated the three factors – education, occupation and income–were the dominant and frequent indicators for measuring socioeconomic status in both English and Persian articles [28-31]. Only four studies (English articles) had composite measure and made a standard indicator in their studies [12-15].

It is similar to the Duncan American SES Scale which is classified occupation according to education and income [58]. Nam and Power [59] also defined the SES indicator based on their occupation status score education and family income for person in a family. In addition, Green (1970)composite a measure based on income, education and occupation [60]. Hodge employed the household prestige which was meant the participations in a survey rated the social position of households described in terms of spouses' occupations, income, and ethnicities [61]. Although ethnicity is important as a SES parameter in other countries [62], there is no evidence in our study about ethnicity variable as a socioeconomic status indicator in Iran. This is mainly because of the ethnicity in health literature in Iran doesn't consider as part of SES measure.

Socioeconomic status,regardless of evaluated by education, occupation, or income, is mostly associated with the various ranges of health disparities. As some studies have revealed that low or middle socioeconomic status linked to the cancer, cardiovascular diseases, and higher mortality rate [6, 63], however we did not find any evidence in our literature.

Also, British researchers used the data from survey respondents who are asked to identify the occupations of four friends. The occupational rankings of the respondent and friends were analyzed with multidimensional scaling techniques which yield an ordinal Cambridge Scale score for each participation [64]. Similarly, the National Statistics Socioeconomic Classification applied occupational relationship and relied on employment theory and grouped persons into, typically, eight nominal strata [65]. Furthermore, we encountered that our findings provided no information about these two scales. Finally, our findings indicated that some articles(eleven studies) had no clear categories for measuring socioeconomic indicators [47-57].

## 4. CONCLUSION

This study was done with the aim of assessing the definition and the categories of socioeconomic status in health literature in Iran

based on published studies. We encountered various definitions and indicators, mainly because of poor quality of articles with diversity in socioeconomic parameter. As it was mentioned before, the measurement of SES is difficult since it is a multi-dimensional indicator. Measuring this indicator in the most researches assessed without standard indicators, we have to measure socioeconomic status, nevertheless. Finally,for solving discrepancies between the SES definitions, we are proposing to design standard indicators that are suitable for health literature in Iran.

## ACKNOWLEDGEMENTS

We wish to acknowledge Dr. Nouzar Nakhaee for his valuable comments for improving our study.

## COMPETING INTERESTS

Authors have declared that no competing interest exists.

## REFERENCES

1. Aggarwal OP, Bhasin SK, Sharma AK, Chhabra P, Aggarwal K, Rajoura OP. A New Instrument (Scale) for Measuring the Socioeconomic Status of a Family. Indian Journal of Community Medicine. 2005;30 (4):111-114.
2. Shavers VL. Measurement of socioeconomic status in health disparities research. J Natl Med Assoc. 2007;99(9): 1013-1023.
3. Haghdoost AA. Complexity of the socioeconomic status and its disparity as a determinant of health. Int J Prev Med. 2013;3:75-76.
4. Muller CW, Tylor TP. Measure of socioeconomic status: Alternatives and recommendation. Child Development. 1981;5(1):13-30.
5. Andresen FM, Miller DK. The future (history) of socioeconomic measurement and implications for improving health outcome among African Americans. J Gerontol A Biol Sci Med Sci. 2005;60: 1345-1350.
6. Berkman L, Epstein AM. Beyond health care socioeconomic status and health. N Engl J Med. 2008;358:2509-2510.
7. Michael OJ, Rossi PH. The measurement of SES in health research: current practice and steps toward a new approach. Social Science & Medicine. 2003;56:769–784.
8. Steding-Jessen M, Birch-Johansen F, Jensen A, Schu¨ZJ, Kjær SK, Dalton SO. Socioeconomic status and non-melanoma skin cancer: A nationwide cohort study of incidence and survival in Denmark. The International Journal of Cancer Epidemiology, Detection, and Prevention. 2010;34:689-695.
9. Muller CW, Tylor TP. Measure of socioeconomic status: Alternatives and recommendation. Child development. 1981; 25(1):13-30.
10. Moher D, Tetzlaff J, Tricco A, Sampson M, Altman DG. Epidemiology and reporting characteristics of systematic reviews. PLoS Medicine. 2007;4(3):e78.
11. Little JA, Corcoran J, Pillai V. Systematic Reviews and Meta-Analysis. Oxford University Press. 2008;1-2.
12. Abdolahi AA, Qorbani M, Asayesh H, Rezapour A, Noroozi M, Mansourian M, et al. The menopausal age and associated factors in Gorgan, Iran. Med J Islamic Republic Iran. 2013;27(2):50-56.
13. Golozar A, Khademi H, Kamangar F, Poutschi H, Islami F, Abne CC, et al. Diabetes mellitus and its correlates in an iranian adult population. Plus one. 2011;6(10):1-9.
14. Mirhosseini NZ, Noor Aini Mohd Y, Shahar S, Parizadeh MR, Ghayour Mobarhen M, Taghi Shakery M. Prevalence of the metabolic syndrome and its influencing factors among adolescent girls in Mashhad, Iran. Asia Pac J Clin Nutr. 2009; 18(1):131-146.
15. Esmaeilzadeh S, Kalantari H, Nakhostin-Roohi B. Cardiorespiratory fitness, activity level, health-related anthropometric variables, sedentary behaviour and socioeconomic status in a sample of iranian 7-11 year old boys. Biol Sport. 2013;30(1):67-71.
16. Roohafza H, Sadeghi M, Shirani SH, Bahonar A, Mackie M, Sarafzadegan N. Association of socioeconomic status and life-style factors with coping strategies in isfahan healthy heart program, Iran. Corat Med J. 2009;50:380-387.
17. Vahabi A, Shemshad K, Sayyadi M Biglarian A, Vahabi B, Sayyad S, Shemashad M, et al. Prevalence and risk factors of Pediculus (humanus) capitis (Anoplura: Pediculidae), in primary schools in Sanandaj City, Kurdistan Province, Iran. Tropical Biomedicine. 2012;29(2):207-211.

18. Donyavi T, Holakouie Naieni K, Nedjat S, Vahdaninia M, Najafi M, Montazeri A. Socioeconomic status and mortality after acute myocardial infarction: A study from Iran. Int J Equity Health. 2011;10(9):1-10.
19. Mahjoubi B, Mirzaei R, Azizi R, Jafarinia M, Zahedi-Shoolami L. A cross-sectional survey of quality of life in colostomates: A report from Iran. Health Qual Life Outcomes. 2012;10(136):1-10.
20. Esmaeily H, Azimi-Nezhad M, Ghayour Mobarhen M, Parizadeh MR, Safarian M, Parizadeh MJ, et al. Asscoiation between socioeconomc facotrs and obesity in Iran. Pakistan jouranl of nutrition. 2009;8(1):53-56.
21. Amanlou M, Jafari SH, Afzalianmand N, Bahrampour Omrany Z, Farsam H, Nabati F, et al. Association of Saliva Fluoride Level and Socioeconomic Factors with Dental Caries in 3-6 Years Old Children in Tehran-Iran. Iran J Pharm Res. 2011;10 (1):159-166.
22. Azimi-Nezhad M, Ghayour-Mobarhan M, Esmaeili HA, Parizadeh MR, Hosseini J, Safarian M, et al. Newly detected hypertension in an Iranian population: An epidemiological study. Asian Biomedicine. 2009;3(6):653-662.
23. Behzadnia S, Vahidshahi K, Hosseini H, Anvari S, Ehteshami S. Obesity and related factors in 7-12 year-old elementary school students during 2009-2010 in Sari, Iran. Med Glas. 2012;9(1).
24. Shekarchizadeh H, Ekhtiari H, Khami M, Virtanen J. Patterns of pre-treatment drug abuse, drug treatment history and characteristics of addicts in methadone maintenance treatment in Iran. Harm Reduct J. 2012;9(18):1-7.
25. Sehat M, Holakouie Naieni K, Asadi-Lari M, Rahimi Foroushani A, Malek-Afzali H. Socioeconomic Status and Incidence of Traffic Accidents in Metropolitan Tehran: A Population-based Study. Int J Prev Med. 2012;3(3):181-190.
26. Poorasl MA, Vahidi R, Fakhari A, Rostami F, Dastghiri S. Substance abuse in Iranian high school students. Addict Behav. 2007; 32:622-627.
27. Samim R, Fatemi S. A sociological survey on musical consumption among people with different social statuses (case study: Tehran). Honar ha ye Ziba. 2007; 32(32):127-135.
28. Bahonar A, Sarrafzadegan N, Kelishadi R, Shirani SH, Ramezani MA, Taghdisi MH, et al. Association of socioeconomic profiles with cardiovascular risk factors in Iran: the Isfahan Healthy Heart Program. Int J Public Health. 2011;56:37-44.
29. Riahi ME. The impacts of social factors on the acceptance rate of gender-related. Stereotypes Women in Development & Politics. 2007;(1):109-136.
30. Kalaki H. Investigating and comparing the rate of youths' religiosity and its aspects in three-high, middle and low-social ranks. Nameh Pejoohesh Farhangi. 2008;9(1): 107-137.
31. Serajzadeh H, Feizi I. Social factors affecting opium and alcohol use among university students in iran. Social Sciences Letter. 2010;21(2):82-102.
32. Razmi M, Haghpanah H, Cohan N, Baseri A, Alamdari A, Zare N. Anemia and iron deficiency in adolescent school girls in kavar Urban Area, Southern Iran. Iranian Red Crescent Med J. 2011;13(2):128-133.
33. Montazeri A, Goshtasebi A, Vahdaninia M. Educational inequalities in self-reported health in a general Iranian population. BMC Res Notes. 2008;1(50):1-6.
34. Abbasimoghadam MA, Dabiran S, Safdari R, Djafarian K. Quality of life and its relation to sociodemographic factors among elderly people living in Tehran. Geriatr Gerontol Int. 2009;9:270-275.
35. Shahraki M, Shahraki T, Ansari H. The effects of socio-economic status on BMI, waist: Hip ratio and waist circumference in a group of Iranian women. Public Health Nutr. 2008;11(7):757-761.
36. Shahraki M, Shahraki T, Shidfar F, Ansari H. Which modifiable, non-modifiable, and socioeconomic factors have more effect on cardiovascular risk factors in overweight and obese women. Journal of Research in Medical Sciences. 2012:676-680.
37. Shayeghi M, Paksa A, Salim abadi Y, Sanei dehkoordi A, Ahmadi A, Eshghi M, et al. Epidemiology of Head lice infestation in primary school pupils, in Khajeh City, East Azerbaijan Province, Iran. Iranian J Arthropod-Borne Dis. 2010;4(1):42-46.
38. Ahmadi M, Ranjbaran H, Momeninejad Amiri M, Nozari J, Mirzajani MR, Azadbakht M, et al. Epidemiologic and socioeconomic status of bladder cancer in Mazandaran province, Northern Iran. Asian Pac J Cancer Prev. 2012;3:5053-5056.
39. Ramim T, Mobayen MR, Shoar N, Naderan M, Shoar S. Burnt wives in

Tehran: A warm tragedy of self-injury. Int J Burn Trauma. 2013;3(1):66-71.
40. Gharipour M, Kelishadi R, Toghianifar N, Tavassoli AA, Khosravi AR, Sajadi F, et al. Socioeconomic disparities and smoking habits in metabolic syndrome: Evidence from Isfahan Healthy Heart Program. Iranian Red Crescent Med J. 2011; 13(8):537-543.
41. Memari A, Kordi R Ziaee V, Mirfazeli F, Setoodeh M. Weight status in Iranian children with autism spectrum disorders: Investigation of underweight, overweight and obesity. Res Autism Spectr Disord. 2012;6:234-239.
42. Eslami B, Sundin Örjan, Macassa G, Khankeh HR, Soares JF. Anxiety, depressive and somatic symptoms in adults with congenital heart disease. J of Psychosom Res. 2013;74:49-56.
43. Taghavi N, Mollaian M, Alizadeh P, Moshref M, ModaberniaSH, Akbarzadeh AR. Orofacial Clefts and Risk Factors in Tehran, Iran: A Case Control Study. Iranian Red Crescent Med J. 2012;14(1): 25-30.
44. Fazel R. The relationship between parents' behaviors, social-economic status, exposure to tv violence and children's nodding or resorting to violent behaviors. Quarterly Journal of Communication Research. 2008;15(54):33-56.
45. Ahmadian M, Asnarulkhadi AS. Socio-Demographic Correlates of Participation in Mammography: A survey among women aged between 35- 69 in Tehran, Iran. Asian Pacific Journal of Cancer Prevention. 2010;13:2717-2720.
46. Davoudi Monfaredm E, Heidarnia MA, Akbari ME, Yavari P, Abadi A. Associations of demographic and socioeconomic factors with complete treatment and follow up of colon cancer. Iran J Cancer Prev. 2012;4(5):203-209.
47. Bakhtiyari M, Ehrampoush E, Enayati N, Joodi G, Sadr S, Delpisheh A, et al. Anxiety as a consequence of modern dietary pattern in adults in Tehran—Iran. Eat Behav. 2013;14:107-112.
48. Mohammadzadeh A, Ahmadshah F, Amiri R, Esmaeeli H. Effect of birth weight and socioeconomic status on children's growth in Mashhad, Iran. Int J Pediatr. 2010;1-5.
49. Nouraie M, Latifi-Navid S, Rezvan H, Radmard AR, Maghsudlu M, Zaer-Rezaii H, et al. Childhood hygienic practice and family education status determine the prevalence of helicobacter pylori infection in Iran. Journal compilation. 2009;14:40-46.
50. Ebrahimi F, Mohd Shariff Z, Rezaeian M, Tabatabaei Z, Yoke Mun C, Tajik E. Socioeconomic status and intake of energy and sodium are associated with calcium intake among pregnant women in Rafsanjan city, Iran. J. Obstet. Gynaecol. 2013;39(1):146-153.
51. Khalaj Farahani abdai F, Cleland J, Mehryar A. Associations Between Family Factors and Premarital Heterosexual Relationships Among Female College Students in Tehran. Intl Perspect Sex Reprod Health. 2011;37(1):30-39.
52. Yavari P, Pourhoseinghol MA. Socioeconomic Factors Association with Knowledge and Practice of Breast Self-Examination among Iranian Women. Asian Pac J Cancer Prev. 2007;18:618-622.
53. Roohafza H, Shahnam M, Zolfaghari B, Tavassoli AA, Sadeghi M, Toloei H, et al. Stress level and smoking status in central iran: Isfahan healthy heart program. ARYA Atheroscler. 2011;6(4):144-148.
54. Rezazadeh A, Rashidkhani B, Omidvar N. Association of major dietary patterns with socioeconomic and lifestyle factors of adult women living in Tehran, Iran. Nutrition. 2010;26:337–341.
55. Shishehgar S, Dolatian M, Alavi Majd H, Bakhtiary M. Socioeconomic Status and Stress Rate during Pregnancy in Iran. Glob J Health Sci. 2014;6(4):254-260.
56. shiva F, Payab M. smoking practice and risk awareness in parents regarding passive smoke exposure of their preschool children Indian J Med Sci. 2009;62(2):228-235.
57. Sohrabi S, Nouraie M, Khademi H, Baghizadeh S, Nasseri-Moghaddam S, Malekzadeh R. Epidemiology of Uninvestigated Gastrointestinal Symptoms in Adolescents: A population-based study applying the Rome II Questionnaire. JPGN. 2010;51(1):41-46.
58. Duncan O. Socioeconomic index for all occupations in A.J Reiss. Occupations and Social Status.1961;109-115.
59. Nam CB, Powers MG. Variations in socioeconomic structure by race, residence, and the life cycle. American Sociological Review. 1965;30:97-103.
60. Green LW. Manual for soring socioeconomic status for research in

health behavior. Public Health Reporter. 1970;85:815-825.
61. Hodge RW, Siegel PM, Rossi PH. Occupational prestige in the United States. American Journal of Sociology. 1964;70: 286-302.
62. Braveman P, Cubbin C, Marchi K, Egerter S, Chavez G. Measuring socioeconomic status/position in studies of racial/ethnic disparities: Maternal and Infant Health. Public Health Reports. 2001;116:449-463.
63. Pamuk E, Makuc D, Heck K, Reuben C, Lochner K. Socioeconomic status and Health Chartbook, 1998, National Center for Health Statistics,: United States. 1998; 84.
64. Prandy K. The revised Cambridge scale of occupations. Sociology. 1990;24:629-655.
65. Rose D, Pevalin D. The national statistics socioeconomic classification: Unifying official and sociological approaches to conceptualization and measurement of social class. ISER Working Papers. 2001; 4.

*© 2015 Mahdavian and Safizadeh; This is an Open Access article distributed under the terms of the Creative Commons Attribution License (http://creativecommons.org/licenses/by/4.0), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.*

*Peer-review history:*
*The peer review history for this paper can be accessed here:*
*http://www.sciencedomain.org/review-history.php?iid=1057&id=25&aid=8510*