Ranking of Socio-demographic Status according to the Impact on Health Status of 5400 Families at Two Districts in Cairo, Egypt

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Abstract: Socio-demographic inequalities were shown to be associated with disease burden in developing as well as developed countries. **Study design and Aim of study**: This study is a cross sectional community-based study design with random cluster sample of 5400 families interviewed in two districts using specific questionnaire form. The aim of the study is raking socio-demographic characteristics according to impact on family health status to identify vulnerable family that should be given priority that could help stakeholders in health sector reform using this approach to reach the equity concept. **Statistical analysis:** logistic regression analysis was conducted to assess the association between socio-demographic characteristics and profile of morbidity, mortality and disability among 5400 families living in two urban districts in Cairo. **Results:** Families headed by women compared with other socioeconomic parameters (family size, education, employment status tec.,) had been proved to be the at-risk families for specific health problems i.e. Psychological problems, hypertension, Heart diseases, musclo-skeletal disorders, diabetes, Liver, eye, GIT diseases) (OR "1.66, 1.64, 1.60, 1.59, 1.49, 1.43, 1.32, 1.25) respectively and 5 -60 years premature mortality (OR 3.69). Crowding Index ranked the second family risk, as it showed significant positive association six diseases i.e. Chest, CNS, Psychological, musclo-skeletal disorders, blood and GIT problems (OR 1.50, 1.48, 1.47, 1.26, 1.25, 1.17) and with the two types of disabilities i.e. congenital and acquired (OR1.96, 1.74). Illiteracy ranked the third important factor influencing heath status due to the positive association with four diseases i.e. Psychological, CNS, musclo-skeletal disorders, and chest diseases (OR 1.55, 1.37, 1.29, 1.22 respectively), neonatal mortality (OR 1.5) and both types of disabilities (OR1.96, 1.74respectively).

Key word: Families headed by women, family socio-demographic risk, crowding Index, Illiteracy   health problems, Family Health Status, Health Sector Reform

List of abbreviations:
CI: Crowding index **HDI**: Human Development Index **MOHP**: Ministry of Health and Population
ETS: Environmental tobacco smoke

1. Introduction

Focusing on measuring the health status at the family level is an innovative approach to support family-oriented health programs. There is substantiation that family-centered care is the standard of practice which results in high quality services and assures the health and well-being of children and their families through a respectful family-professional partnership. Any individual in the family is not merely a passive recipient of the influences of the family, but rather, plays an increasingly interactive role in the family, shaping in part the environment in which he or she lives. Similarly, the family works in partnership with the professionals providing health services, especially where chronic diseases or disability conditions are present (1). At the same time there is consistent evidence that the socioeconomically better-off individuals do better-on most measures of health status including mortality, morbidity, malnutrition and health care utilization. This inverse association has been detected between health outcomes and a matrix of socioeconomic standard (SES) indicators based on data collected at the individual, household and community levels, including the traditional education, occupation and income measures, information on household possessions and level of community development. These types of research on the effects of socioeconomic well-being on health is important for policy makers in developing countries, where limited resources make it crucial to use existing health care resources to the best advantage. Although SES is not in itself a causal factor, understanding its linkages to health can provide clues to the actual mechanisms involved (2)(4).

People are exposed to a spatial differentiation of determinants of mortality (3). Mortality of a particular population is the result of interaction between different factors of biogenetic, physical and psychosocial character, some of which affect mortality directly (e. g. age, sex, genetic changes; smoking, food, radiation), and others indirectly (socioeconomic factors particularly – for example living standard,

employment, education). These factors have differing intensity in different societies and regions.

Despite family – centered care ensures equity access to health services; nevertheless the concept of equity in health care has been widely debated over the years. Although equity may be defined in many ways, all of its definitions revolve around a common point: the fair distribution of something (such as health services) among different individuals and groups in society. Resource allocation refers to the process by which available resources are distributed among competing needs. It is a means of achieving the ministry's objective of making access to basic health services more equal and ultimately improving health status (5) *Equity in health is aiming at reducing unequal opportunities to achieve good health, and consider priority to less privileged social groups.(6).*

Therefore a new wave of health sector reforms has to be equity-oriented rather than efficiency-directed reforms as was in the 1990s. Consequently it is considered that: "Epidemiologists and health systems researchers can best help equity-oriented health policy-makers take advantage of the present climate by developing an evidence based alternative interventions for effectively reaching the poor to improve health (7).

Study background

In order to develop a clear definition and identification of vulnerable families that should be given priority in health care to ensure equity, a project was conducted in two semi-urban areas in Cairo, Egypt "Masr Al-Kadema and Al-Saida Zeinab" with a total population of 434,225 residents, or on the average 86,843 families. Masr Al-Kadema and Al-Saida Zeinab are composed of 12 and 15 Shiakha (clusters) respectively. The study included 5400 families (Total individuals 23,136 members). The area under study was divided into clusters and randomly selected until completing the sample size from the selected clusters. We studied both health status (Morbidities, mortalities and disabilities) and socio-demographic characteristics with two habits smoking and addiction using a questionnaire form. The morbidities are presented by the affected body systems and organs to reduce overlapping, except in cancer. The disability is presented by cause, rather than manifestations to be considered by preventive health programs. Pregnancy outcome, deaths of infant, children and those before the age of 60 years had been used as indicators for family mortality in our study.

Advantages of the study theme:

In the current study we manage morbidity data by studying prevalence of non-communicable diseases on the family level for the following advantages:

1-Diseases run in families either has genetic or environmental risk factors can highlights the at risk group as more prone to diseases as pre-hypertensive and pre-diabetics individuals and indirectly included their complications,

2-The study focused on different non-communicable diseases. Galal [8] developed a synthesis paper on disease pattern in Egypt. He emphasized that the demographic and epidemiologic transition has made the disease burden become obvious for the chronic non-communicable diseases in Egypt. According to Barakat [9] report, 41% of all deaths in Egypt are due to non-communicable diseases which include diabetes, cardiovascular disease and respiratory diseases.

3-The included morbidity problems constitute a high priority in Egypt. According to CAPMAS 2008, the percent distribution of mortality by cause was: 38.7% from cardiovascular diseases, 21% from undefined diagnosis, 8.9% from GIT diseases, 6% from respiratory diseases and 5.7% from cancer (10). The inclusion of respiratory diseases in the list of the morbidity risks had enriched the study data Coultas **and Samet** (2008) claimed that respiratory diseases are major causes of disability and death worldwide.(11)

The following socio-demographic characters (Independent variables) were studied:

1. Environmental risk was measured by; the crowding index (CI). It was calculated by dividing the number of individuals living the household by the number of bedrooms. The family is considered at risk if CI is more than 2.
2. Demographic risk was measured by 6 items: family size and age-sex structure of the family. The family is considered vulnerable if the number of family members exceeded 5 individuals, or one or more family members was infants, having children 1- <5 years of age, school age children (6-18), females in the reproductive age (15-49) and elderly (65 and more years old).
3. Socioeconomic risk was measured by 3 items: (head of the family, education, working for cash). Families were considered at risk if families were headed women, presence of illiterate family members aged 6-50 years, and presence of family members aged 25-60y not working for cash.
4. Risk of unhealthy habits was measured by 2 risk indicators: smoking and addiction.

The following health status variables (dependent) were studied:

1. Morbidity was measured by 14 diseases. hypertension, diabetes, diseases of GIT, eye, psychological, locomotors, skin, blood, heart,

chest, liver, renal, CNS or cancer. A person is considered to be suffering from any of the studied health problems if he reported seeking medical advice and was diagnosed to have the health problem.

2. Disability was measured: congenital or acquired disability.
3. Mortality was measured lethal outcome of pregnancy and premature deaths before the age of 60. (stillbirth, neonatal or post-neonatal mortality, child 1-4 mortality, or deaths of members aging 5-60 years.)

Study design and Aim:

This study is a cross sectional community-based analytic study design with random cluster sample aiming for raking socio-demographic characteristics according to impact on family health status to identify vulnerable family that should be given priority, helping the stakeholders in health sector reform using this approach to reach the equity concept.

Statistical analysis:

Regression analysis was conducted to describe the effects of socio-demographic and individual habits on the different morbidity, mortality and disability profile of the studied families. Socio-demographic risk factors were represented by crowding index (CI) >2 members/room, illiteracy, unemployment, family size >5 members, family headed by woman. Individual habits represented by smoking and addiction. They considered as independent variables each one is binary taking the value 1 if the family have the risk (even one member only suffer from the risk) the other taking 0 value. The morbidities, mortalities and disabilities are utilized as dependent variables; the dependent variable is binary taking on the value 1 if the family has an individual or more suffering from any of the following morbidities (Hypertension, diabetes, CNS…..) if not, the value will be 0, or the family have one of the following mortality problems (Still-births, Neonatal deaths, Post-neonatal deaths, Infant deaths, Children 1-<5 years deaths and 5-<60 years deaths), if not the value will be 0, if one family member or more suffer from congenital or acquired disability will take value 1 if not, it will take 0.

SPSS version 15 was used for the statistical analysis. Descriptive statistics was done in the form of simple frequency tables and cross tabulations was done for qualitative variables. Relation between socio-demographic factors and habits (independent) variables with different morbidities, mortalities and disabilities (dependent) variables using logistic regression analysis (data were coded into binary data (0/1) for easy interpretation) the results displayed as Odds ratio and confidence interval (CI) with significant level at P < 0.05.

3. Results:

Socio-demographic profile of the studied families:

The current study included 5400 households formed of 23,136 individuals. Tables 1 and 2 illustrate the family size and the age-sex structure of the families. According to the family size about one fifth (22.1%) of the studied families were considered at-risk (having more than 5 individuals/family) (Table 1). According to the age and sex structure, about 80% and 54% of the families had females in the child bearing period (15-49) and children in the school age (6-18 years old) respectively.

Table (3) shows that about two thirds (61.2%) of the families had one or more of its members in the age group 6-50 years old who did not attend school or have any form of education. While 70% of the families have one or more members aged from 25-60 years old unemployed/or have constant income (Table 3) Additionally, 3639 smoker (represent 17.25% of the studied individuals above 5 years) and 156 drug addict (represent 0.7% of the studied individuals above 5years) are distributed in 56.7% and 2.3% of the studied families respectively.

Morbidity, Disability and Mortality Problems:

The problem of morbidity among families had been studied in relation to 14 chronic diseases. Figure (1) illustrates the percent of families reporting that one or more of its members suffered from any of the 14 chronic diseases. Hypertension (41%) and musculoskeletal disorders (41%) came on the first rank of disease burden among the studied families. Additionally, the information derived from figure 1 allows for categorization of chronic disease into three categories according to the prevalence of diagnosed morbidities among the studied families:

Disease burden with high prevalence among families: Hypertension (41%) and musculoskeletal disorders (41%),

Disease burden with medium prevalence among families (23%-11%): GIT disorders, diabetes, eye diseases, blood diseases, chest diseases, heart diseases and renal diseases,

Disease burden with low prevalence among families (8%- 2%): CNS diseases, skin diseases, liver diseases, psychological disorders and cancer.

Information derived from Fig.1, is disease oriented, therefore overlap in disease burden might be a case where diabetics could be hypertensive and have heart diseases as well. Additionally, the information does not provide full picture about the severity of the disease or the associated complications.

A 66.9% of the studied population (15,482 individuals out of 23,136) is above 18-years of age. With a total of 2617 and 1338 individuals suffered from hypertension and diabetes respectively. Thus the calculated prevalence of hypertension and diabetes for

individuals 19 years old and above was found to be 16.9% and 8.6% respectively (data not shown in tables).

It was found that 2.5% and 4.3% of the families suffer from congenital or acquired disabilities respectively. Premature mortality of one or more family member in the age cohort of 5-60 years was found in 3 out of 20 families (15%), while infant mortality was reported by about 7% of the families in the study (Table 4). Concerning demographic and socioeconomic risks 92% and 90% of the families were suffering respectively (Figure 2).

About 47% of the studied families have living environment risk factors due to high crowding index (more than 2 individuals / bedroom).

About 84% (4532/5395) of families suffer from disability-morbidity-mortality Fig.2.

Logistic regression results:

Tables 5, 6, 7 display the relation between socio-demographic and habits as independent variables on family morbidities, mortalities and disabilities as dependent variables

1-Families headed by women and family health status:

In our study almost one out of five studied families (21.1%) was families headed by women (FHW). It is obvious from Table 5 that there were statistically significant association between FHW and overall morbidities and mortalities (OR: 1.89, 2.07) while no sig. relation with both types of disabilities (Tab.7)

The following eight diseases show sig. Odds Ratio (OR) within families headed by women (Psychological, hypertension, Heart, musclo-skeletal disorders, diabetes, Liver, eye, GIT diseases "1.66, 1.64, 1.60, 1.59, 1.49, 1.43, 1.32, 1.25" respectively) .Tab. 5   showed sig. OR with 5-60 years old mortalities (3.69). Tab.6 indicates that families headed by female were more liable for early deaths of their members.

2- Crowding Index (CI) and family health status:

While CI (Crowding Index) has significant relation with both types of disabilities and morbidities specially with six diseases: Chest, CNS, Psychological, musclo-skeletal disorders, blood and GIT problems (with sig. OR 1.50, 1.48, 1.47, 1.26, 1.25, 1.17) respectively Tab.5 indicated positive association with

the two types of disabilities (congenital and acquired) OR 1,96,1.74 (tab.7).

3-Iilliteracy and family health status:

From the table 7 we observe that the presence of illiterate family members has significant association with all studied outcomes (overall morbidities, mortalities and both types of disabilities)   with statistically sig. OR with four diseases: Psychological, CNS, musclo-skeletal disorders and chest diseases " 1.55, 1.37, 1.29, 1.22" respectively (tab. 5) and sig. OR with neonatal mortality OR 1.5 (tab. 6).

4-Unemployment and family health status:

The unemployment indicator is calculated as the proportion of all families having at least one member who is unemployed/have no constant source of income in our study represents 70% of the families.

Presence of unemployed family members lead to increased risk of allover morbidities (sig. OR 1.17) Tab.7 especially with three diseases diabetes, hypertension and GIT (OR 1.4, 1.29, 1.24 respectively) Tab.5

5-Family size and family health status:

The association between the family size and different health outcomes showed sig. association with only two diseases: eye and GIT problems (OR 1.22, 1.2 respectively) Tab.5, while there is sig. association between large family size and infant, neonatal and 5-60 years old mortalities (1.54,1.52,1.28 respectively) Tab.6

6-Unhealthy habits and family health status:

On studying the relation between addiction and different morbidities three diseases have sig. OR i.e. with Cancer, psychological and skin diseases (3.01, 2.4, 1.73 respectively) and sig. association with congenital disability (OR 2.43).

While on studying relation with smoking we found significant association with two diseases only skin and blood diseases (OR 1.5, 1.22) respectively (Tab.5) and infant mortality (OR 1.29) (Tab.6).

Table (1) Percent distribution of the studied families according to family size

No. of individuals / family	No. of families	Percent
1-3	1861	34.4
4-5	2346	43.5
6 and more	1193	**22.1**
Total	5400	100

Table (2) Percent distribution of families according to number of family members with age-sex risks

| Age and Sex Risk Categories	No.(%) of families according to number of family members				N(%) Families with age-sex risks
	No risk	1 member	2 members	≥3 members	
First year of life	5072 (94)	320 (6)	7 (0)	1 (0)	328 (6)
Children 1-< 5y	3983 (74)	1155 (21)	248 (5)	14 (0)	1404 (26)
School age (6-18y)	2485 (46)	1143 (21)	1050 (20)	722 (13)	2916 (54)
Females (15-49y)	1059 (20)	3137 (58)	838 (16)	366 (6)	4320 (80)
Elderly ≥65y	4677 (87)	609 (11)	114 (2)	0 (0)	702 (13)

Table (3): Percent distribution of families according to number of family members with socio-demographic risks

| N(%) of families according to number of family members(n=5400)					
Risk Categories	No risk	1 member	2 members	≥3 members	N(%) of families at risks
Having family members 6-50 with no education	2096 (38.8)	1221 (22.6)	1386 (25.7)	697 (12.8)	**3305 (61.2)**
Having family members 25-60 years old and not working	1620 (30.0)	3135 (58.1)	483 (8.9)	161 (3.0)	**3780 (70.0)**
Smoking	2335 (43.2)	2681 (49.6)	254 (4.7)	129 (2.4)	**3062 (56.7)**
Addiction	5269 (97.6)	114 (2.1)	13 (0.2)	4 (0.07)	**124 (2.3)**

Table 4: Percent distribution of families according to number of family members with disability-mortality risks

N(%) of families according to number of family members exposed to risk n=5400					N(%) of families experienced the risks n=5400
Risk Categories	0	1 member	2 members	≥3 members	
Congenital disability	5263 (97.5)	129 (2.4)	7 (0.1)	1 (0.02)	**135 (2.5)**
Acquired disability	5166 (95.7)	224 (4.1)	10 (0.2)	0 (0)	**232 (4.3)**
Still-births	5159 (95.5)	193 (3.6)	39 (0.7)	9 (0.1)	**238 (4.4)**
Neonatal deaths	5213 (96.5)	143 (2.6)	35 (0.6)	9 (0.1)	**184 (3.4)**
Post-neonatal deaths	5176 (95.9)	171 (3.2)	34 (0.6)	19 (0.3)	**221 (4.1)**
Infant deaths	5021 (93)	264 (4.9)	83 (1.5)	32 (0.6)	**379 (7)**
Children 1-<5 years deaths	5194 (96.2)	143 (2.6)	45 (0.8)	18 (0.3)	**200 (3.7)**
5-<60 years deaths	4590 (85)	726 (13.4)	65 (1.2)	19 (0.4)	**810 (15.0)**
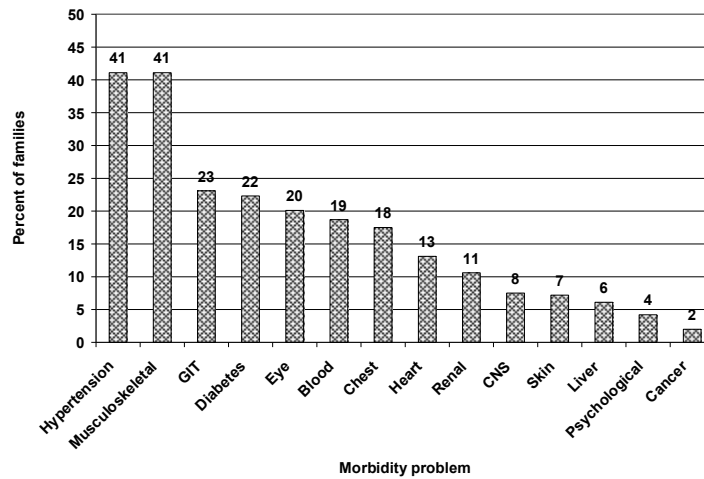
Figure 1: Disease Burden among 5400 studied families: Rank ordering of morbidity problems according to their prevalence among 5400 families.
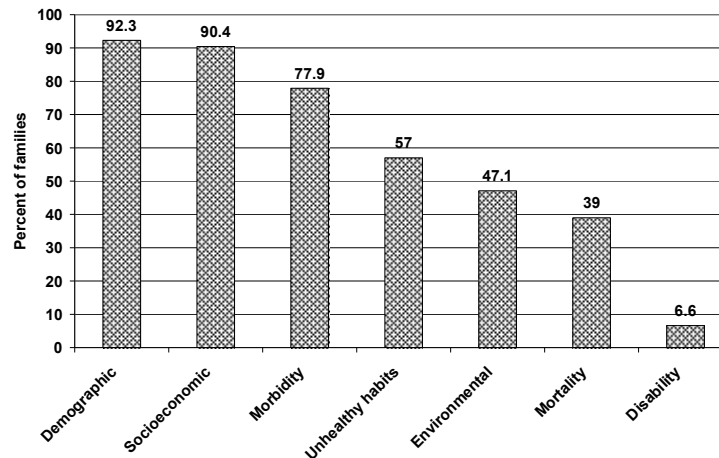
Figure 2: Percent of 5400 families according to aggregated demographic, social and health risks

Table (5) Association between demographic, socioeconomic and habits with different morbidities at family level for 5400 families

Morbidities	CI	Family size >5	Having Unemployed family member	Having Illiterate family member	Families headed by woman	Smokers among family member	Addiction among family member
	OR (95% CI)	OR (95% CI)	OR (95% CI)	OR (95% CI)	OR (95% CI)	OR (95% CI)	OR (95% CI)
Hypertension	0.94 (0.83; 1.07)	1.31 (1.13; 1.52)	**1.29 (1.14; 1.47)**	1.07 (0.96; 1.20)	**1.64 (1.42; 1.88)**	1.01 (0.90; 1.14)	0.88 (0.61; 1.26)
Diabetes	0.86 (0.74; 1.00)	1.17 (0.98; 1.40)	**1.40 (1.20; 1.64)**	0.98 (0.85; 1.12)	**1.49 (1.27; 1.75)**	0.83 (0.72; 0.95)	1.15 (0.76; 1.73
GIT	**1.17 (1.01; 1.36)**	**1.20 (1.02; 1.43)**	**1.24 (1.06; 1.45)**	1.02 (0.89; 1.16)	**1.25 (1.06; 1.47)**	1.13 (0.98; 1.29)	0.91 (0.60; 1.39)
Psychological	**1.47 (1.09;1.98)**	0.65 (.45; .95)	1.14 (.83; 1.57)	**1.55 (1.15;2.1)**	**1.66 (1.21; 2.29)**	1.15 (.86; 1.54)	**2.4 (1.34; 4.30)**
Locomotors	**1.26 (1.11; 1.43)**	1.12 (.961; 1.298)	1.10 (.969; 1.255)	**1.29 (1.15;1.45)**	**1.59 (1.38; 1.83)**	0.97 (.861; 1.088)	0.69 (.472;.992)
Liver Disease	1.02 (.784; 1.325)	1.18 (.874; 1.605)	1.12 (.856; 1.455)	0.86 (.682; 1.086)	**1.43 (1.09; 1.88)**	0.95 (.748; 1.21)	0.75 (.33; 1.72)
Renal Disease	1.14 (.932; 1.396)	1.24 (.99; 1.56)	1.03 (.83; 1.26)	1.19 (.99; 1.44)	1.06 (.85; 1.33)	1.02 (.85; 1.23)	1.13 (.66; 1.92)
CNS	**1.48 (1.18; 1.87)**	0.97 (.74; 1.26)	1.04 (.81; 1.32)	**1.37 (1.10; 1.71)**	1.16 (.89; 1.50)	0.85 (.69; 1.06)	1.19 (.65; 2.19)
Cancer	1.07 (.69; 1.66)	1.00 (.59; 1.69)	1.01 (.65; 1.59)	1.11 (.74; 1.67)	0.96 (.59; 1.58)	0.83 (.56; 1.25)	**3.01 (1.35; 6.70)**
Eye	1.10 (.94; 1.29)	**1.22 (1.02; 1.46)**	1.12 (.956; 1.32)	0.87 (.76; 1.0)	**1.32 (1.11; 1.56)**	0.91 (.79; 1.05)	1.44 (.96; 2.15)
Skin	1.26 (.99; 1.6)	1.154 (.89; 1.51)	1.235 (.95; 1.6)	1.066 (.85; 1.33)	0.796 (.59; 1.07)	**1.495 (1.19; 1.89)**	**1.73 (1.02; 2.93)**
Blood	**1.25 (1.07; 1.46)**	1.051 (.88; 1.26)	1.011 (.86; 1.19)	1.111 (.96; 1.29)	.716 (.59; .87)	**1.22 (1.055; 1.42)**	1.178 (.776; 1.790)
Heart	1.04 (.87; 1.25)	1.13 (.91; 1.4)	1.1 (.91; 1.33)	1.01 (.85; 1.19)	**1.60 (1.32; 1.94)**	0.91 (.7;68; 1.08)	1.28 (.79; 2.07)
Chest	**1.50 (1.27; 1.76)**	1 (.83; 1.20)	1.09 (.92; 1.29)	**1.22 (1.05; 1.42)**	1.01 (.84; 1.22)	1.12 (.96; 1.3)	1.06 (.68; 1.64)

Table (6) Association between demographic, socioeconomic and habits with mortality pattern at family level for 5400 families

Mortalities	CI	Family size >5	Unemployed family member	Illiterate family member	Families headed by woman	Smoker family member	Addiction among family member
	OR (95% CI)	OR (95% CI)	OR (95% CI)	OR (95% CI)	OR (95% CI)	OR (95% CI)	OR (95% CI)
Neonatal mortality	1.14 (.81; 1.61)	*1.52 (1.1; 2.2)*	.81 (.58; 1.15)	*1.52 (1.09; 2.1)*	1.01 (.69; 1.48)	1.19 (.86; 1.63)	1.2 (.52; 2.78)
Infant mortality	1.12 (.88; 1.44)	*1.54 (1.18; 2)*	.95 (.74; 1.22)	1.15 (.92; 1.44)	1.14 (.87; 1.49)	*1.29 (1.03; 1.6)*	.87 (.44; 1.74)
1-4 Y Child mortality	.91 (.65; 1.27)	1.29 (.88; 1.9)	1.0 (.73; 1.38)	.8 (.6; 1.07)	1.4 (1; 1.96)	.95 (.71; 1.28)	1.04 (.42; 2.6)
5-60 Y mortality	.75 (.62; .9)	*1.28 (1.0; 1.6)*	.65 (.54; .77)	1.03 (.88; 1.22)	*3.69 (3.11; 4.38)*	.64 (.54; .76)	.75 (.42; 1.35)

Table (7) Association between demographic, socioeconomic and habits with different forms of disease burden at family level for 5400 families

	CI	Family size >5	Unemployed family member	Illiterate family member	Families headed by woman	Smoker family member	Addiction among family member
	OR (95% CI)	OR (95% CI)	OR (95% CI)	OR (95% CI)	OR (95% CI)	OR (95% CI)	OR (95% CI)
Overall Morbidity	**1.39 (1.19; 1.16)**	1.26 (1.04; 1.53)	**1.17 (1.17; 1.42)**	**1.42 (1.24; 1.62)**	**1.89 (1.56; 2.28)**	0.93 (0.81; 1.06)	1.05 (0.68; 1.64)
Overall Mortality	1.07 (.94; 1.22)	1.158 (.99; 1.35)	1.004 (.88; 1.14)	*1.13 (1.0;1.27)*	*2.07 (1.8; 2.39)*	1.09 (.97; 1.23)	1.12 (.78; 1.59)
Congenital disability	*1.96 (1.3; 2.88)*	.75 (.48; 1.17)	1.07 (.71; 1.62)	*1.6 (1.1; 2.36)*	1.02 (.66; 1.59)	.8 (.56; 1.15)	*2.43 (1.15; 5.15)*
Acquired disability	*1.74 (1.28; 2.35)*	.98 (.7; 1.36)	.99 (.7; 1.36)	*1.48 (1.11; 1.99)*	.96 (.67; 1.37)	1.24 (.93; 1.7)	1.22 (.59; 2.55)

4. Discussion

This study addressed important relation between, socio-demographic, behavioral issues and their impact on family health status as morbidity, disability and mortality through studying profiles of 5400 family residing in two semi-urban areas in Cairo. According to Egypt Human Development Report (2003), HDI ranked of Al-Saida Zeinab district and Masr Al-Kadema districts as 15th and 22nd respectively, among Cairo's 29 districts.(12) Therefore, the residents of studied community are considered of medium and low socioeconomic class.

Relationship between socio-demographic and study morbidity, mortality and disability

1- families headed by women and family health status:

In our study almost one out of five studied families (21.1%) was headed by women. Families headed by women had higher risk than other families regarding morbidity and mortality.

Other studies declared the steady rise in female-headed households and in the number of children living in female-headed households, Such problem is progressing as about half of all women will experience single motherhood at some point in their lifetimes , and a majority of children will live in a female-headed household ((13, 14).

High poverty rates among female headed households with children, when compared with other household types; as total income is chronically low in many female-headed households due to the presence of at most only one (female) wage earner and women's lower earnings in the labor market (15,16,17).

2- Crowding Index and family health status:

The current study used the crowding index to measure the "Living Environment Risks". About 47% of the households have high crowding index (> 2 persons /bed rooms). Public health professionals consider that bad housing remains a sensitive political issue in many countries. There is an association between overcrowding and common serious diseases as tuberculosis and rheumatic fever. Overcrowding in houses is associated with domestic violence, adolescent delinquency, scholastic backwardness, and some mental disorders (18). Unfortunately, there is limited data about crowding index. For example EDHS showed that the mean number of persons per room was 1.8 and in Al-Darb Al-Ahmar study (19) it was 1.6 persons per room. In our study we found that CI has significant relation with both types of disabilities and morbidities specially with six diseases Chest, CNS, Psychological, Locomotors, blood and GIT problems (with sig. OR 1.50, 1.48, 1.47, 1.26, 1.25, 1.17) respectively Tab.5. So we can rank CI as secondary factor has impact on family health status.

3- Illiteracy and family health status:

The current study showed that 4,659 individuals (29%) of the studied population in the age group 6-50 years were illiterate, and were distributed on 61% of the households included in the study (tab.3). This is in accordance with the figures obtained at the national level that showed an illiteracy rate of 34% among individuals 15+ years old (20) from table 7 we observe that presence of families having illiterate family members had significant association with all studied health outcomes (overall morbidities, mortalities and both types of disabilities) specially sig. OR with four diseases: Psychological, CNS, Locomotors and chest diseases " 1.55, 1.37, 1.29, 1.22" respectively tab. 5 and has sig. relation with neonatal mortality OR 1.5 tab. 6)

Studying the relationship between reading ability and health is important for three reasons: to understand better the true etiology of poor health outcomes; to identify a potential clinical marker of patients at risk for poor outcomes; and to inform the development of interventions (21). Additionally, low literacy may have a direct negative effect on health especially for conditions that requires substantial and complex self-care on the part of the patient, because of the barriers to accessing and using health information, particularly written information. L low literacy may be a marker for other conditions, such as poverty and lack of access to health care, that lead to poor health.(22)

The current study results coincide partly with the concept that low literacy is associated with several adverse health outcomes as patients with lower literacy were more likely than those with higher literacy to report retinopathy (OR, 2.33; 95% CI, 1.2 to 4.6) and cerebro-vascular disease (OR, 2.71; 95% CI, 1.1 to 7.0) (23). On the other hand Two good-quality studies had evaluated the relationship between reading ability and hypertension. Neither identified an independent relationship between reading ability and presence or control of hypertension which coincide too with our study tab.5. (24) At the same time many ecological studies have shown that the educational level of an area strongly correlates with local mortality rates (25,26), which also agree with our results at tab.6-7

4-Unemployment and family health status:

The rate of un-employment was about 32% among the studied population in the working age group 25-60 years distributed among 70% of the families included in the study (tab.3). Thus, measuring the problem of unemployment at the household level indicates high magnitude of the problem, compared to the problem at the individual level. The prevalence of unemployment detected by the current study is almost three times that obtained by another study at the national level that found a 10% unemployment rate

among 15+ years old individuals (20). This situation reflects high economic dependency ratio among the studied families. On studying the relation between unemployment and health outcomes we found that presence of unemployed family members was associated with increased risk of allover morbidities (sig. OR 1.17) Tab.7 especially with three diseases: diabetes, hypertension and GIT (1.4,1.29,1.24 respectively) Tab.5 which coincide with the results of many research studies that marks unemployment as influencing factor for reduction in happiness and general well-being.

It has furthermore been argued that unemployment may be a health hazard, and many studies have shown that unemployed persons have poorer health and higher mortality than employed people. It is generally recognized that those who are unemployed have lower quality of life and probably worse health and shorter life, particularly for males (27,28,29,30),

5-Family size and family health status:

Concerning family size this study revealed that about 42% of the households are composed of 5 and more individuals. The average number of individuals per household is more than four individuals (4.1) which consistent with the El-Zanaty &Associates study in Al-Darb-Al-Ahmar (similar community in Cairo) where average number of individuals per households is 4.3. (19) Therefore, our study area reflects the situation in "Old Cairo Districts". At the same time about one fifth (22.1%) of the study families have >5 individuals (at risk families) on studying the relation between the family size and different outcomes we found that there is sig. association with only two diseases: eye and GIT problems (OR 1.22,1.2 respectively) while there is sig. association with infant, neonatal and 5-60 years old mortalities (1.54,1.52,1.28 respectively)

Concerning family structure infants constitute a relatively high proportion of the studied community, compared to Cairo governorate data; 1.46% vs. 0.8% (10). Such findings reflect high fertility in the studied community. While children 1-<5 years old constitute relatively same proportion (7.3%) of the studied community, compared to Cairo governorate data. (10).

Children and Adolescents 6-18 years (School age) formed 24.3% of the studied population. Out of each 5 there are 4 families with females in the reproductive age, yet females in the reproductive age constituted 26% of the studied community. Such findings are important for planning and implementing family-oriented/reproductive health programs. The concept of coverage of 26% of the population with RH services has to be replaced by coverage of 80% of the families with RH services.

About 13% of surveyed families had elderly ≥ 65 years old forming about 3.6% of the studied population

(tab.2). However, corresponding figures in a similar community in Al-Darb-Al-Ahmar (19) showed higher proportion of such age category (7.7%). Findings from CAPMAS, showed that elderly (≥ 60 years old) represent 8.4% of Cairo population,(10) and counterpart figure in Al-Darb-Al-Ahmar was 12.2% (19). Such findings could indicate that studied community had high premature mortality rates among adults before the age of 65 years. From the health services point of view, there are reasons to include such elderly people category in family health risk assessment. Despite elderly formed 3.6% of the studied population, they are distributed across 13% of our families.

6-Unhealthy habits and family health status:

The current study focused on two important unhealthy behaviors; smoking and addiction. There are many reasons to examine the situation of smoking habit at the family level. Cigarette smoking is identified as the leading cause of preventable morbidity and premature death. Beside the economic cost, there are many health problems. Environmental tobacco smoke (ETS) is associated with premature death. Homes are the predominant location for childhood exposure to ETS. (31) Cigarette smoking is a hazard in another way as about 20-25% of deaths in domestic fires are a result of smoking.(18)

The current study showed that 57% of households have one or more smokers indicating that ETS is a problem in more than half of the studied households. It would be expected that almost 1:5 individuals in the community under study [3639 smokers: 19497 non – smokers] are exposed to the hazards of ETS exposure.(all family members are exposed as passive smokers). Such finding coincide with EDHS data 2005 where 56% of the interviewed women reported that at least one of the household member is smoker or uses other forms of tobacco (32). In our study we found positive relation between smoking and two diseases only skin and blood diseases OR 1.5, 1.22 respectively and also has relation with infant mortality OR 1.29.

The study succeeded in providing community-based self-reported information about addiction, with a 2.3% prevalence rate among households in the study community. The problem of substance abuse and addiction represents a contemporary worldwide challenging problem, irrespective of the state of development of the country. However, the etiology and motives for addiction varies across the countries. The Ministry of Health (1996) report on National Research on Addiction (use, Abuse, Dependency and Addiction) indicates that epidemiological data on drug abuse in the Arab countries are very scarce. In Egypt the problem of addiction is increasing, however, it is difficult to find a statistics that measures the magnitude of the problem nationwide. In our study addiction among family

members was associated with high prevalence of different morbidities i.e. psychological and skin diseases (3.01, 2.4, 1.73 respectively) and congenital disability OR 2.43.

Strengths of the study:
The health system themes of this study included the use of public health informatics for: planning of health services at the district level according to "family health approach", prioritize the socio-demographic, behavioral issues according to their impact on family health status, improve health status at the community level throughout health policies concept related to "equity in health care", programmatic concerns related to preventive and curative services throughout the lifecycle and institutional integration and management of health system research for action taking.

Thus, the study provided key information to those involved in health policy formulation and planning of family health programs.

Limitations of the study:
The study was depending on history taking with no detailed information about epidemiological determinants for morbidity and mortality. Therefore, there was underestimation of the problem, because reporting on cases depends on previous access to medical services for diagnosis and treatment. Therefore, missed mild cases could not be reported. Additionally, there are no comparable studies that assess the magnitude of morbidities at the family level. Almost of epidemiological studies are disease-oriented at the individual level. It is difficult to compare morbidity statistics derived from studied community-where the majority of people are categorized as of low socioeconomic standard with national statistics.

Conclusion and recommendation:
There is association of the socio-demographic characters and health status at the family level. Families headed by women are considered of high priority at-risk families due to vulnerability to high morbidity and mortality of the family members.

The study raised the importance of using community-based public-health informatics that covers different risk factors to identify priority families to ensure equity for health care.

Ethical approval:
The study protocol was approved by the Public Health Department, Faculty of Medicine, Cairo University. Additionally, two professors form the Public Health Department had approved the study instruments. The Vice Dean of the Faculty of Medicine for Environmental Affairs had approved the study protocol. Verbal consent had been taken from the head of the family to complete the survey form.

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