

Self-health assessments in Saudi Arabia: Directions for an integrated primary healthcare

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ABSTRACT

Background: Public health data for dissemination and discussion in Saudi Arabia, for the purposes of primary healthcare, are limited but the new initiatives of General Authority of Statistics creates many national surveys. One of the most recent one, the Family/Household Health Survey - 2017 aims to fill the gaps, at the same time, aids in discussions on primary healthcare. **Objectives:** Analyses done in this research are aimed at appraising the self-assessed health and to examine age-sex and geographic differentials and their probable interconnections with chronic diseases, injuries, and periodic examinations. **Data and Methods:** This survey conducted in October–December, 2017 covered both native and foreigner households from all the 13 administrative areas through a random sample procedure involving primary sampling units and secondary sampling units. A portion of the published data on self-assessment of health, chronic diseases, injuries, and periodic medical examinations were analyzed. **Results:** More than half of the persons in the Kingdom, reportedly, are in good health; more so among females than males: proportions decreased with increasing age up to 40 years, thereafter increased sharply. Moreover, the major regions have lesser proportion of people with good health. Prevalence of chronic diseases increases with age, in both total and native population, but with variations across specific diseases – hypertension, diabetes, cancer, and cardiovascular diseases (CVDs) and with geographic differentials. On the other hand, there are injuries (from traffic accidents and others) occurred at house, work/school, public place, and other places; pertinent with geographic variations. Moreover, age, sex, and regional differences in periodic health examinations have a contributing effect on health assessments. Moreover, the median age shows a pattern resembling adults assessing good health; chronic diseases after 50s; injuries before 40s; periodic medical examinations in 50s; with females at a lower age, in both groups of population. **Conclusions:** The national health system played an important role not only in health status and health assessments but also in building confidence and trust and thereby enhancing optimism, realism, recognition, self-awareness, and acceptance of physical condition. Thus, age, sex, and regional variations in health assessment are born out of chronic diseases, injuries, and periodic medical examinations and also of expectations and experiences. Generation of such information, effective dissemination, and regular discussions at various levels followed by in-depth analyses raise the primary healthcare and thus the population health.

Keywords: Administrative areas, age groups, chronic diseases, health systems, injuries

Background

Self-assessment of health, a process that includes self-observation, self-judgment, and self-evaluative reaction resulting in performance measurement has manifold applications in medical

practice, especially in primary healthcare settings with a family approach.^[1,2] This reflects actual health resultant of diseases and other physical conditions including body mass index showing objective health status, health needs, and health infrastructure requirements, at a macro level, but with variations across educational groups. Such assessments and comparisons facilitate high risk identification (vulnerable) enabling protective measures and enhancing awareness in the primary health care sector that comprising of health specialities, major disease interventions, lateral programs including school health, and services planning.^[2-5]

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As Saudi Arabia with a well functional healthcare sector, manned by a mix of native and foreign labor force, has many issues to handle including employee and patient satisfaction giving rise to challenges of care networks – either resource intensive or resource thrifty, quality of care, teamwork and leadership to improve knowledge, attitude, and practice.^[6-9]

Self-assessment of health showing self-perceived health is a powerful health indicator linked with several social variables facilitating creation of necessary services, within the primary healthcare sector, by considering the least disadvantaged population living in rural and remote areas; health of girls and women; preventive health and early diagnosis; and sensitization of care along with shortages of staff and operational equipment.^[3,4,10-13] Data on primary health care in Saudi Arabia are less coordinated and disseminated making it arduous to familiarize and study bringing out the demand for updated information accessible on internet.^[14] Building and restructuring primary health sector to address economic and social progress facilitating life expectancy and maternal, infant and child mortality in line with demographic changes, in turn, influences health scenario and thereby, health assessments.^[15] Still, vital services including medical/nursing care clinics, health centers, geriatric departments, and preventive measures such as awareness campaigns, and accessible and acceptable services are in demand at friendly primary healthcare level to deal with the vulnerable groups such as children below 5 years, women of reproductive age, and elderly.^[3,11,12,16,17]

Studies on health perceptions and assessments are of importance to professional managers in the primary health sector to improve efficiency in attending to needy and at risk people in addition to facilitating capture of pathological changes and associated symptoms beforehand, beyond the disease diagnosis, which aids control actions and thereby health improvement.^[18-20] Moreover, perceived self-assessed health reveals a positivism developed through education and facilitated by marital relationships, nature of work, social support, financial preparedness, access to healthcare services, social and economic advantages, and employment giving scope for family physicians to handle carefully in the context of increasing education and health awareness.^[21]

Primary healthcare moving services from hospitals to communities adopting family practices is in demand for screenings and assessments of health status and health risks in general: a positive effect with appropriate resources and opportunities bringing fundamental changes in health services in Saudi Arabia.^[16] Occupying four-fifths of the Arabian Peninsula in terms of land area and population, Saudi Arabia plays crucial roles in initiating policies and programs for monitoring and evaluation in order to improve primary healthcare and human development.^[11,22] Population in Saudi Arabia, in general, have positive views toward life, death, and overall health along with hopefulness of family life, and deeper awareness of Allah/God, combined with religious practices.^[23] However, the demand for vital services including medical and nursing care, obesity clinics,

and geriatric care are needed to be integrated into primary health care so as to improve health of poor and marginalized population through adoption of legislations, and necessary control and continued monitoring incorporating care for lifestyle diseases like hypertension, diabetes, cancers, and CVDs.^[12,23-26] All these efforts demand carefully set surveys, analyses, and research studies.

Health issues receiving greater concern include communicable diseases, including malaria and schistosomiasis, and motor vehicle accidents; these take a major toll of public health system due to the emergence of lifestyle diseases and injuries in the era of increasing life expectancy, changing morbidity patterns, decreasing mortality, and improving quality of life.^[3] Several studies conducted to light into the perceived health status in Saudi Arabia explain economic difficulties, limited access to health services, lack of resources, pressures of setting up uniform curriculum, economic growth, modernization, globalization, increasing affluent lifestyles, and diversity of pilgrims: all these are considered to be the challenges addressed by primary healthcare system.^[16,22,25,27-32]

In the light of the change in information requirements, the General Authority for Statistics of Saudi Arabia builds statistical information useful for primary healthcare through various surveys. A part of the published data of the family/household health survey-2017 are analyzed further to explain the pertinent aspects of self-assessed health and its interlinkages with chronic diseases, injuries, and periodic medical examinations. Dissemination and discussions of this data shall add value to the academics on primary healthcare and family physician practices in the country, with an integrated perspective.

Data and Methods

The Family/household Survey 2017 was carried out to generate a reliable dataset for the health planners and decision-makers, especially of the primary sector, and to serve as a reference to improve, update and monitor implementation of health policies and strategies, to make international and regional comparisons, to evaluate implementation processes, and to identify needy population.^[33] Following the total population and housing census framework 1431H (2010), covering native and foreign households, this survey considered non-overlapping homogeneous geographical areas (Primary Sampling Units - PSU): from where the households (secondary sampling units - SSU) were drawn following a regular random sampling procedure [Table 1].

This survey gathered information of household members (insurance, smoking, health status, accidents and injuries, healthy lifestyle patterns, marriage and household planning, fertility, and child mortality) through a structured format. A pilot survey was conducted, prior to the actual survey, during October 8–November 1, 2017 by means of investigators and supervisors trained through introductory lectures, techniques of personal interviews, dealing with households, monitoring, and auditing data collection. The actual survey took place between November 10 and December 3, 2017.^[33]

Table 1: Sample design and sample size

Administrative area	Sampling units	Sampling units (households)
Riyadh	207	2,726
Makkah Al-Mokarramah	242	4,256
Al-Madina Al-Monawarah	92	1,656
Al-Qaseem	66	1,188
Eastern Region	168	2,024
Aseer	90	1,620
Tabouk	73	1,314
Hail	65	1,170
Northern Borders	70	1,260
Jazan	71	1,278
Najran	64	1,152
Al-Baha	60	1,080
Al-Jouf	66	1,188
Total	1,334	24,012

The classified data were analyzed, as applicable to the primary health sector, as follows,

- Percentage of the total population for each sex, age group, and administrative area
- Prevalence rate of chronic diseases by sex, age group, and administrative area using the formula $PR = \frac{P_{ai}}{P_{ti}} \times 100$; where

P_{ai} is the persons suffering from a disease at age i and P_{ti} is the total population at age i

- Percentage of injured to the total population for age and administrative area by using the formula $PI = \frac{P_{ij}}{P_{ti}} \times 100$;

where P_{ij} is the persons injured i and P_{ti} is the total population at age i

- Percent of injured by place to the total injured for age and administrative area
- Percent of persons undergoing periodic medical examinations to the total population by age group and sex for total and native population
- Median age of male, female, total population for total and native population for self-assessed health, chronic diseases, periodic examinations, type of injuries, and place of injury by

applying the formula $Median = lmd + \left(\frac{\frac{n}{2} - \sum f_x}{f_{md}} \right) \times i$; where

lmd is the lower limit of the median class; n the sample size; $\sum f_x$ is the cumulative frequency above the median class; f_{md} is the frequency of the median class; i is the class interval.

Results

Results of the analyses are classified into self-assessed health and factors influencing self-assessed health covering non-communicable chronic diseases and injuries. All these sections are explained across age, administrative area, and periodic examinations for both total and native population, wherever possible. It is hoped that results of these analyses are in tandem with the requirements of primary healthcare and family practices, especially the age, sex, and place of residence.

Levels of self-assessed health

The self-assessed (perceived) health status as good, as reported in the survey 2017, demonstrates that females are at an advantage: more than two-thirds reporting good health as compared to less than half of males [Figure 1]. These results show the supremacy of females on their health status, which might have reasons of reduced risks and exposures to road traffic accidents, pollution, occupational hazards, infections from crowded commercial places, poisons from restaurant foods, long travels, and frequent visits to deserts. All these risky behaviors are manly in the country.

Moreover, there are marked age differentials in the percentage of population, who assessed to be in good health: a higher proportion (both males and females) in ages 15–19 years and 20–24 years. But, with increasing age their percentages reduced up to age 40–44 years: increased, thereafter, till old age. This trend is similar to both males and females, but with a steep increase in females of age 40–44 to 50–54 years, thereafter, stagnated till 60–64 years. Such a male-female difference favors females of 40–54 years (the later adulthood, typically mothers of grown up children): probably, attributed to the reduced domestic responsibilities, higher self-esteem, and increased parental obligations. This transition in a woman's life would, positively, impact upon their health assessment.

On the other hand, males show a marked increase in their percentage reporting good self-assessed health (an increase of 20.8 points) between the age group of 60–64 and 65+ years. That is, males in older age assessed their health, more positively. This is a unique situation, despite the expected compression of morbidity in old age. Probably, old-aged males in Saudi Arabia are more realistic and optimistic than others accepting ill-health and senility.^[34]

However, the male female gap is negligible in the early ages (15–19 and 20–24 years); thereafter it increased slowly till 40–44 years and widened, further, till 50–54 years (nearly 40 percentage points). In the further age groups, the difference reduces and converges in old age of 65 years and above (13.3 points difference). Such a male female gap in the self-assessed health is clearer across major age groups: minimum in younger ages of 15–19 and 20–24 years (2.0 points – 80.2% of females as against 78.3% of males); higher in the middle ages of 25–59 years (23.2 points – 64.1% of females as against 40.9% of males); and moderate in old age of 60 years and above (22.1 points – 83.6% in females as against 61.5% in males). Overall, 79.2% of young adults, 49.7% of middle-aged and 69.8% of old-aged have self-assessed their health as good [Figure 2]. It is also to be noted that the percentage of persons assessing good health is low in the age groups from 30–34 years to 45–49 years: 45.8 percent (37.2% of males, 60.1% of females) and with a male female gap of 22.9 points.

Males of age 40–44 years reported the lowest (32.1%) and 65+ years the highest (72.9%) as against females of age

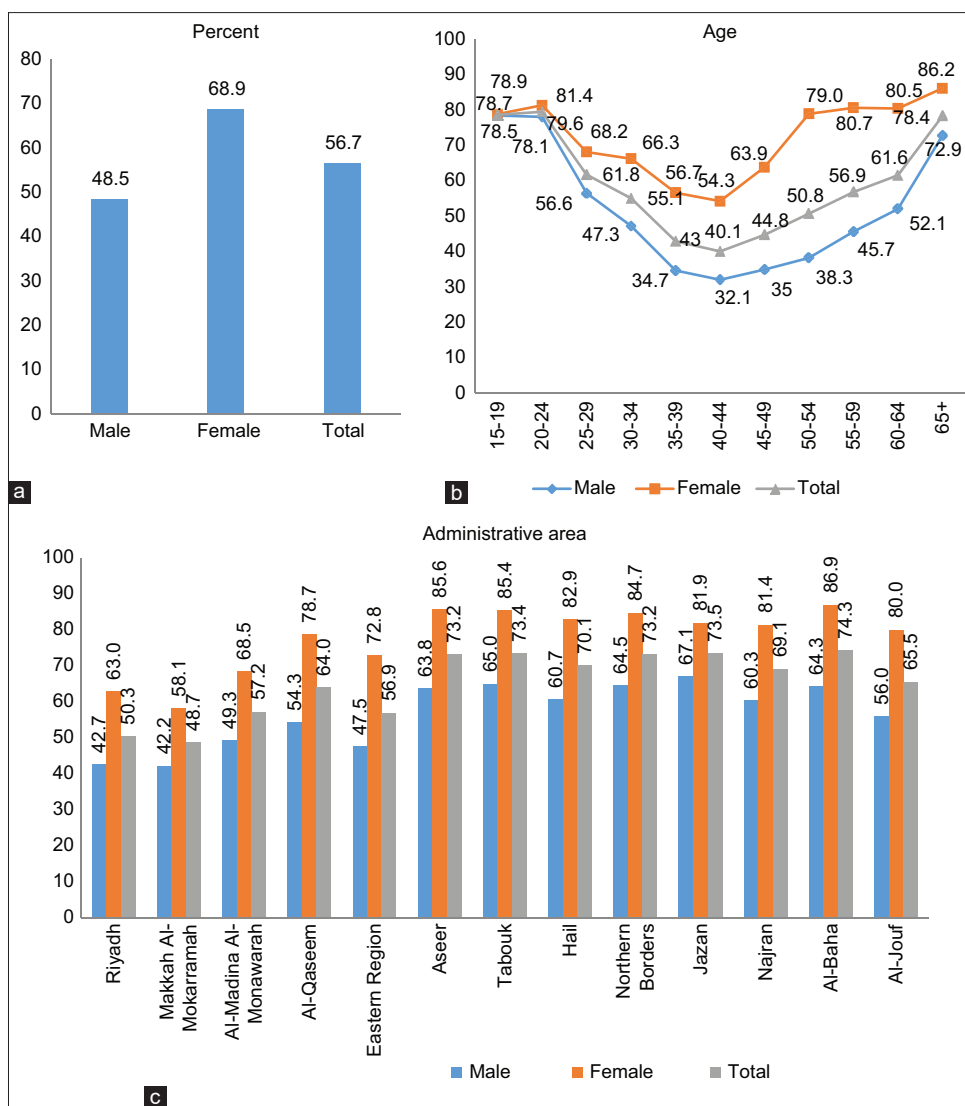


Figure 1: (a-c) Reporting self-assessed health as good (15 years and above) – males and females

40–44 years (54.3%) and 65+ years (86.2%). As of the total persons, the lowest percentage in 40–44 years (40.1%) and highest in 65+ years (78.4%). In all cases, the lowest proportions are found in the age of early 40s and highest in the old age. This might be introspective for the poor health perceptions and assessment at peak adult ages and good at senile ages.^[27] On the other hand, it explains the connections with the myth/reality of age 40 years as the starting point of non-communicable diseases like hypertension, diabetes, CVDs, kidney troubles, liver complications, etc. Thus, early 40s are troublesome suffering ages whereas the old age is an age of acceptance and obligations.

Saudi Arabia is divided into 13 administrative areas: major areas (Riyadh, Makkah, Madina, and Eastern) and others. Major administrative areas of the country have a low percentage of persons reporting good self-assessed health; among them Makkah Al-Mokarramah has the lowest (48.7%) whereas Eastern Region has the highest (56.9%). The highest male-female difference is in Eastern Region (25.3 points), followed by Riyadh (20.3 points), Al-Madina Al-Monawarah (19.3 points), and Makkah

Al-Mokarramah (16.0), in the order. Of the other areas, Al-Baha has the highest percent reporting good self-assessed health (74.3%), followed by Jazan (73.5%), Tabouk (73.4%), Aseer (73.2%), Northern Borders (73.2%), and Hail (70.1%), in the order.

Al-Qaseem, Al-Baha and Al-Jouf have higher male-female gap (more than 22 points). In short, major areas have 51.7% of persons reporting good self-assessed health as against 70.8% in other areas, with a male-female gap of 19.5 points and 21.1 points, respectively. So, based on percent of persons with good self-assessed health, administrative areas could be classified into three, namely, prominently good health having more than 70% (Aseer, Tabouk, Hail, Northern Borders, Jazan, and Al-Baha), moderately good health having 60–70% (Al-Qaseem, Najran, and Al-Jouf) and subtly good health having below 60% (Riyadh, Makkah Al-Mokarramah, Al-Madina Al-Monawarah, and Eastern Region). On the other hand, the administrative areas are classified into three on the basis of male-female difference such as: minimum gap - less than 20 percentage points (Jazan, Makkah Al-Mokarramah, and Al-Madina Al-Monawarah);

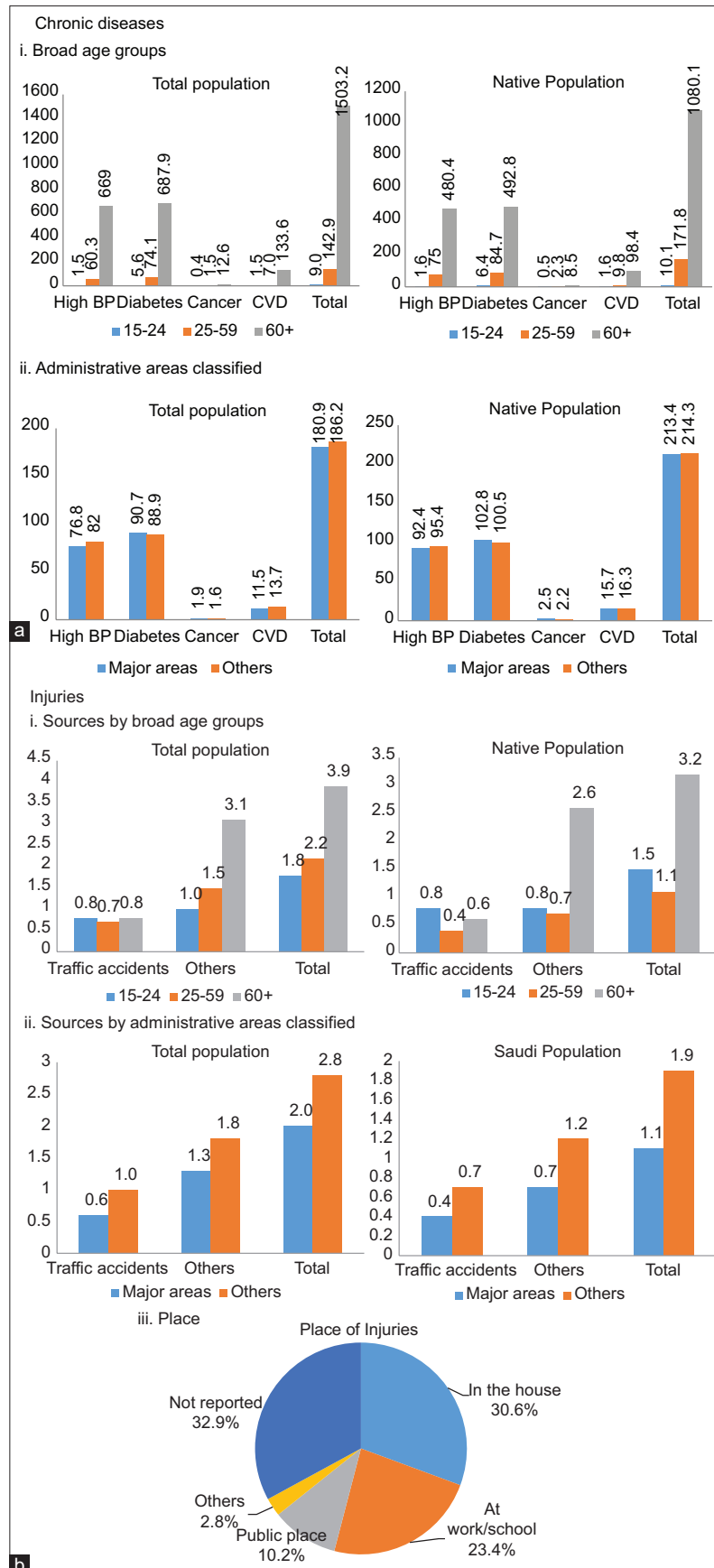


Figure 2: Contd...

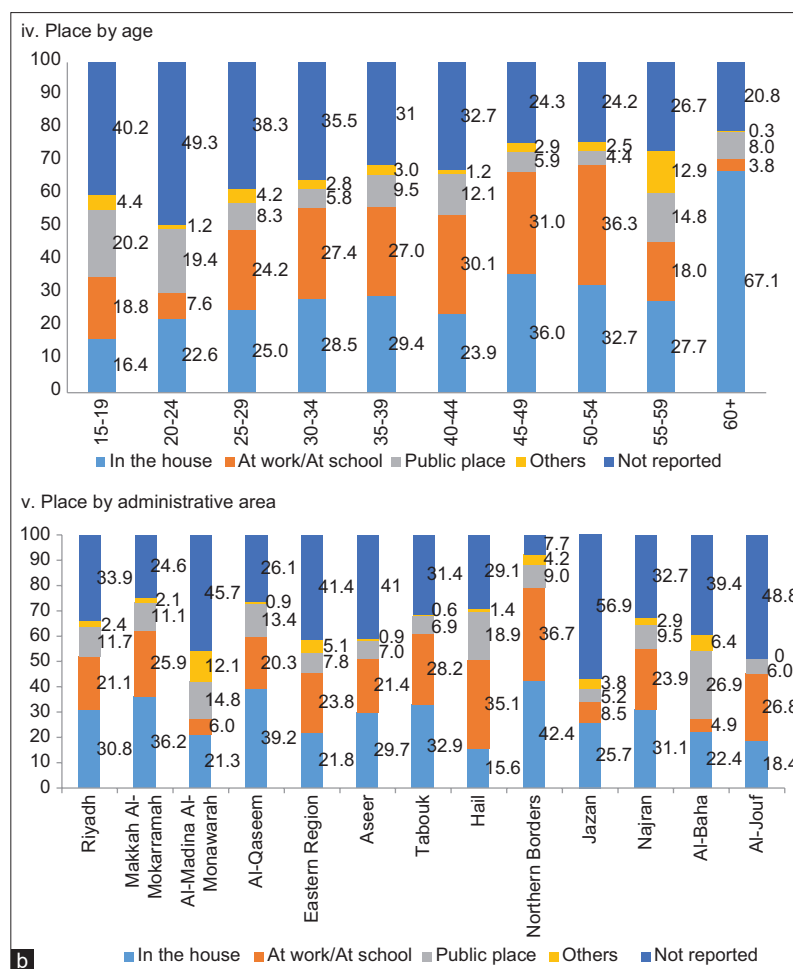


Figure 2: Prevalence of chronic diseases and injuries. (a) Chronic diseases. i. Broad age groups. ii. Administrative areas classified. (b) Injuries. i. Sources by broad age groups. ii. Sources by administrative areas classified. iii. Place. iv. Place by age. v. Place by administrative area

moderate – 20–23 points (Riyadh, Aseer, Tabouk, Hail, Northern Borders, Najran, Al-Baha); and high – 24 points and more (Al-Qaseem, Eastern Region, and Al-Jouf).

Factors influencing self-assessed health

Self-assessment of health might reflect objective health condition resulting from diseases, disabilities, and periodic medical examinations/medications. These three variables of importance in primary health are analyzed and interpreted, here, for their probable influence on health status and assessments.

Chronic Non-communicable Diseases

Differences and patterns of health assessments could, possibly, be attributed to the prevalence rate of non-communicable chronic diseases and injuries. Four major diseases, recorded, are hypertension (High BP), diabetes, cancer, and CVDs; the common chronic diseases in the country. These diseases together have a prevalence rate of 182.3 per 1,000 persons, including multiple pathologies, which is considered to be higher [Table 2].

Out of these diseases, diabetes is the most common one recording a prevalence rate of 90.2, followed by hypertension (78.1),

CVDs (12.1), and cancer (1.8). There is a positive relation between prevalence and age: increasing prevalence along with age. These diseases are higher among those aged 40 years and above; conforming to an already established fact of 40 years as the beginning of health complications and lifestyle diseases. It increases seriously, thereafter, adding vulnerability with multiplicity of diseases (co-morbidity), especially in old age (65+ years). In short, an older person aged 65 years and above has more than two diseases, on an average (prevalence rate of 2,034 per 1,000 persons showing multiple pathologies and morbidity compression in old age). In comparison, native population has slightly higher prevalence rates up to 60 years, where all the four chronic diseases are considered. In other words, disease prevalence in old-aged native population (60–64 and 65+ years) remains lower in comparison with the total population of the same age. That is, disease prevalence among native population differs from that of the total population, while analyzed through age groups, especially in old age. The picture is clearer while analyzing across broad age groups: all these diseases have its presence since adolescent/youth, but their prevalence increases with age: old age (60 years and above) marks an age of all these diseases exemplifying the theory of compression

Table 2: Prevalence rate of chronic diseases (age 15 years and above) per 1000 persons

Age groups/areas	Total population					Native Population				
	BP	Diabetes	Cancer	CVD	Total	BP	Diabetes	Cancer	CVD	Total
15-19	0.8	4.7	0.3	1.3	7.1	1.1	5.4	0.3	1.3	8.1
20-24	2.2	6.4	0.5	1.7	10.7	2.2	7.3	0.6	1.9	11.9
25-29	3.0	8.4	0.9	0.9	13.2	4.1	9.9	1.1	0.7	15.8
30-34	10.3	14.1	0.8	1.0	26.2	10.7	17.7	1.4	1.1	31.0
35-39	22.4	29.2	0.8	3.1	55.6	28.8	32.2	1.3	3.9	66.2
40-44	47.5	61.8	1.7	5.7	116.8	63.2	65.1	4.1	9.3	141.8
45-49	100.7	111.3	1.6	9.9	223.6	121.8	129.2	1.8	14.4	267.2
50-54	192.0	233.5	3.8	20.7	450.0	234.4	259.3	4.4	28.5	526.6
55-59	282.3	343.6	3.8	35.3	665.0	302.7	344.7	5.0	42.3	694.7
60-64	434.1	485.3	10.2	69.6	999.2	406.2	441.1	10.8	61.2	919.3
65+	916.5	901.4	15.1	201.1	2034.0	522.0	521.7	7.2	119.3	1170.3
Total	78.1	90.2	1.8	12.1	182.3	93.4	102.0	2.4	15.9	213.7
Riyadh	67.9	83.0	2.1	10.4	163.4	87.4	101.6	2.9	14.8	206.7
Makkah Al-Mokarramah	87.6	103.3	2.0	14.7	207.6	100.4	108.1	2.5	19.4	230.4
Al-Madina Al-Monawarah	67.1	86.5	0.7	6.1	160.5	72.9	96.0	1.1	8.0	178.0
Al-Qaseem	81.6	85.0	0.5	9.7	176.7	102.8	104.7	0.7	12.8	221.0
Eastern Region	77.0	83.5	1.9	10.2	172.5	96.2	99.4	2.6	14.8	213.0
Aseer	93.5	98.3	1.8	14.1	207.6	106.5	107.5	2.3	17.3	233.6
Tabouk	84.8	104.8	0.9	18.2	208.6	89.7	108.4	1.1	15.4	214.6
Hail	73.1	87.7	2.0	13.2	176.0	94.9	106.7	2.7	15.6	219.8
Northern Borders	85.3	84.1	2.1	8.8	180.3	103.4	99.0	2.8	11.6	216.8
Jazan	81.6	74.9	2.4	15.6	174.5	90.9	80.1	3.0	18.1	192.1
Najran	59.5	80.7	1.3	12.2	153.7	69.4	97.7	2.8	16.4	186.3
Al-Baha	86.6	98.0	2.3	17.1	204.0	92.6	106.8	2.8	19.8	222.0
Al-Jouf	60.2	80.1	1.6	12.8	154.8	74.3	96.6	2.3	18.0	191.2
Total	78.1	90.2	1.8	12.1	182.3	93.4	102.0	2.4	15.9	213.7

of morbidity [Figure 2]. Both the total population as well as the native population follow a similar trend but with varying rates of prevalence across age groups: a comparatively lower prevalence rate in old age, which could be attributed to their lifestyles, food habits, occupations, and living arrangements. But during other ages, native population has comparatively higher prevalence of these diseases as compared to total population.

Tabouk, Aseer, and Makkah Al-Mokarramah areas have high prevalence rate, almost equal among the total population. While Al-Baha has prevalence close to those mentioned areas, others have low prevalence. Najran has the lowest prevalence, followed by Al-Jouf, Al-Madina Al-Monawarah, and Riyadh, in the order. In the case of native population, Aseer has the highest prevalence of chronic diseases, followed by Makkah Al-Mokarramah, Al-Baha, Al-Qaseem, and Hail, in the order. Al-Riyadh has a prevalence of 206.7, referring that nearly 207 persons (out of 1000) suffer from diseases considered, including co-morbidity. On the other hand, Al-Madina Al-Monawarah has the lowest prevalence, followed by Najran, Al-Jouf, and Jazan in the order. Overall, such variations of disease prevalence make the area wise differences negligible.

Injuries

Another probable cause of ill-health inflicting upon self-assessed health would be the injuries of various kinds victimized by the population: sources of which are grouped into traffic accidents and others [Table 3]. No doubt, road and traffic form the major source of injury not only in the Arabian Gulf but also in the

developing countries, due to unsafe road conditions, driving regulations, and security measures. It shows that 2.2% of persons, in general, victimize injuries: its percentage among native is slightly lower (1.3%). Of the total injured, the share of traffic accidents is less than one-third, in both the groups. There are certain age groups vulnerable to injuries; both traffic accidents and others. Old age has seriously affected, as expected, due to reduced motor skills or physical capabilities.

Risk of injuries increases with increasing age (from adolescent/youth to old aged): those in working (adult) age have lesser risks, both in total and native population. There is an increase in the incidences of injuries (other than traffic accidents) to the old-aged population, which could, probably, have a direct impact on their perceived, self-assessed, health. On the other hand, the major administrative areas have lesser risks of injuries as compared to other smaller areas. This, probably, shows the safety standards, regulations, and quality of housings, pavements, and infrastructure.

A large majority of these injuries took place in the house: risks of movements, complexity of equipment, modern bathrooms, or even the interpersonal conflicts possible. In addition, there are injuries from workplace/schools, and also from public places – occupational hazards, school-based injuries, and accidents/falls at public places.

While those injured at house are highest in old age, followed by 45–49 years and 50–54 years, respectively, but are less frequent

Table 3: Percent of Population injured (15 years and above) by type injury

Age groups/regions	Total population			Native Population		
	Traffic accidents	Others	Total	Traffic accidents	Others	Total
15-19	0.6	1.0	1.6	0.5	0.7	1.2
20-24	1.0	1.0	2.0	1.0	0.9	1.8
25-29	0.8	1.2	2.0	0.5	0.8	1.3
30-34	0.8	1.5	2.3	0.6	0.7	1.4
35-39	0.6	1.4	2.1	0.5	0.6	1.1
40-44	0.7	1.5	2.2	0.2	0.6	0.8
45-49	0.6	1.8	2.4	0.2	0.7	0.9
50-54	0.6	1.9	2.6	0.3	0.8	1.1
55-59	0.4	1.2	1.6	0.2	0.6	0.8
60+	0.8	3.1	3.9	0.6	2.6	3.2
Total	0.7	1.5	2.2	0.5	0.8	1.3
Riyadh	0.5	1.0	1.4	0.4	0.5	0.8
Makkah Al-Mokarramah	0.6	1.9	2.5	0.3	0.8	1.1
Al-Madina Al-Monawarah	0.5	0.6	1.1	0.3	0.4	0.7
Al-Qaseem	0.4	1.2	1.6	0.3	0.8	1.1
Eastern Region	1.0	1.4	2.3	0.6	0.8	1.5
Aseer	1.1	1.5	2.6	0.9	1.1	2.0
Tabouk	2.4	5.3	7.7	1.4	3.0	4.4
Hail	0.7	1.8	2.5	0.6	0.7	1.2
Northern Borders	0.3	3.9	4.2	0.3	2.3	2.6
Jazan	0.9	0.7	1.5	0.8	0.5	1.3
Najran	1.5	3.0	4.5	1.2	2.0	3.2
Al-Baha	0.6	0.9	1.5	0.4	0.8	1.2
Al-Jouf	0.5	0.5	1.0	0.4	0.3	0.7
Total	0.7	1.5	2.2	0.5	0.8	1.3

among adolescent/youth ages. Three age groups (40–44, 45–49, and 50–54) are more susceptible to injuries in the workplace/school. Injuries at public places are higher for age groups 25–29, 30–34, and 35–39 years but lower in 45–49, 50–54, and 65 + years. Injuries from other places are more frequent in case of those aged 55–59 years but lowest in case of 40–44 years. These differences indicate the age susceptibility of injuries by place.

Area wise, injuries from home are more frequent in Northern Borders, Al-Qaseem, and Makkah Al-Mokarramah but least frequent in Al-Madina Al-Monawarah, Hail, and Al-Jouf. On the other hand, injuries from workplace/school are more in Northern Borders, Hail, Al-Jouf, and Makkah Al-Mokarramah whereas lesser in Al-Madina Al-Monawarah, Jazan, and Al-Baha. Injuries at public places are higher in Al-Baha, Hail, and Al-Qaseem whereas lesser in Jazan, Al-Jouf, and Tabouk.

Periodic medical examinations

A recent healthcare mechanism introduced to monitor public health is the periodicity of examinations as part of disease surveillance based on a strategy of symptom identification, diagnosis, and treatment at the right time to control further infections or deteriorations leading to disabilities. Nearly one-third of the persons, without respect to age, undergo periodic medical examinations ranging from weekly to more than a year among both the total and native population. In comparison, females undergo periodic examinations more often than males [Table 4].

Table 4: Percent of population undergoing periodic medical examinations

Frequency	Total population			Native Population		
	Male	Female	Persons	Male	Female	Persons
Weekly	0.5	0.5	0.5	0.6	0.6	0.6
Monthly	2.7	4.4	3.4	3.3	4.8	4.1
Quarterly	4.8	6.2	5.3	5.3	6.4	5.9
Half yearly	6.7	7.1	6.9	6.2	6.9	6.6
Yearly	11.2	10.4	10.9	6.7	8.3	7.5
More than an year	6.4	7.4	6.8	5.8	6.6	6.2
Total	32.2	36.1	33.7	28.0	33.7	30.7

Age Factor

Health status and assessments have close link with age and developmental stages, mostly, related to physical capabilities and physiological functioning. Thus, it is essential to consider interrelationship while addressing the self-assessed health. It is, therefore, assumed that people of young age – adults – often consider themselves as healthier due to their peak physical performance involving motor skills and bodily functions. The persons reporting good self-assessed health are at an early adult age (32.7 years): both males and females [Table 5].

On the other hand, median age, as an indicator, shows the pattern of chronic disease prevalence in the specific population groups. For e.g., 56.1 years is median age of total population with chronic diseases: native population have a slightly higher median age (59.1 years). Age differences along specific diseases are in such a way that cancers have the earliest age of onset (in

Table 5: Median age calculated for various dimensions of health status (15 years and above)

(a) Assessments and factors						
Indicators	Total population			Native Population		
	Population assess own health as good male					
Female		32.9			-	
Total		32.6			-	
		32.7			-	
Chronic diseases						
High BP		57.3			59.4	
Diabetes		55.3			58.5	
Cancer		52.2			51.9	
Cardiovascular diseases		61.5			63.1	
Total		56.9			59.1	
Type of injury						
Traffic accidents		34.2			31.1	
Other than traffic accidents		39.1			37.1	
Total		37.5			34.3	
Place of injury						
In the house		41.3			-	
At work/School		38.9			-	
Public place		34.6			-	
Others		36.1			-	
(b) Medical examinations						
Frequency	Total population			Native Population		
	Male	Female	Persons	Male	Female	Persons
Weekly	52.2	61.0	54.5	56.0	60.3	58.6
Monthly	54.1	48.9	52.0	57.3	51.8	54.3
Quarterly	50.7	48.8	49.9	51.9	51.0	51.4
Half yearly	44.7	41.1	43.5	46.0	42.5	44.4
Yearly	40.6	36.9	39.4	40.5	37.8	39.0
More than an year	40.6	37.0	39.2	38.6	36.9	37.6

total population and native population) starting immediately on completing 50 years; highest in case of cardiovascular disease for total (61.5 years) and native population (63.1 years); diabetes and hypertension have a different age (before cardiovascular but after cancers), in both total and native population.

Injuries happen to the total population at an earlier age, the peak adulthood age (in the 30s): earlier to native population. Traffic accidents which occur earlier to others in both total and native population. However, injuries at public places happen earlier than at house or work/school. Adding up to this are the age details of periodic medical examinations: its frequency increases along median age.

Discussions

Arab countries in general and Saudi Arabia in particular have strengthened their health systems and health delivery networks to address various sectors of population by offering a mix of services from both public and private facilities, complemented by health insurance. Still, there is an urge for improving coverage of poor and marginalized population for pollution control, reducing exposures, continue monitoring, combating spread of harmful practices, women's health, and geriatrics.^[12,23,34-37] Moreover, health and human development in the Arab countries have an impact on health services accessible to the least disadvantaged rural

population, tackling the absence of qualified staff and operational equipment, dealing with social and economic status of girls and women, investing in preventive health through early diagnosis, and sensitization: all have significance on primary healthcare planning and service provisions.^[11,27]

However, public sector facilities catering to nearly 80% of beneficiaries^[33,35] have made significant improvements in maternal and child health.^[38,39] Still, there are concerns about economic difficulties and limited access to health services in the Kingdom, especially in the case of old-aged persons.^[25,40] Still, the changes over the years in the primary health system in response to the demands, especially of the vulnerable group (children, women, and elderly) have been appreciated. It has been revamped with curative services and trained personnel connected with a network of hospitals, dispensaries, health centers, maternal and child care centers, health posts, etc., are proved to be successful especially when integrated with literacy levels, women's socioeconomic status, qualifications of health staff, general behavior, and interactions between patients and medical personnel.^[3,11,29] As a result, morbidity and premature mortality declined in Arab countries in total and Saudi Arabia in specific: mostly those related to child birth, communicable diseases, nutrition, new born, and maternal disorders.^[26] This contrasts with the situation of few Arab countries having a large percentage of population, especially of rural areas, deprived of access to

primary health facilities resulting in high levels of maternal and infant mortality.^[11]

Such an impressive commitment and health networking might have an impact on health status and healthcare of population, which play a role in health assessments; nearly three-fifths report good health. These show not only the faith in the system consisting of qualified staff, operational equipment, efficient catering of at risk people, early diagnosis, and sensitization but also practices and religiosity integrated to the lifestyle.^[11,23,30] However, the huge male-female difference in the proportion assessed health as good (68.9% versus 48.5%) could have been explained for the basis of biological superiority of female, differential life expectancy, exposure levels to adverse environmental conditions (pollution, smoke, sand storms, heat, cold, etc.), road traffic and occupational hazards, and so on.^[22,30,31] On the other hand, women's shortcomings such as impact of marital dissolutions, dependence on activities of daily living, and psychopathology were stressed in the Saudi Arabian context.^[25,28]

In short, women are protected and safeguarded in the society within the four walls of the family by men, community, society, and religion. Possibly, this protection offers them good health and disease free life, in turn, making them positive, optimistic and hopeful increasing their visit to health facilities and diagnostics, and thus the perceived health.^[30] Probably, the situation of women in the Kingdom has improved to provide structures for fulfilling their lives and financial means, increased education and employment, delay in marriages, fertility reductions, reduced emphasis on women's role on motherhood, and improved resources and opportunities.^[32,41]

A similar observation from the data that a higher percentage of old aged is in good health. Moreover, their positive views, influenced by socio-medical factors, toward the end of life and attitude toward death, overall good health, hopefulness of family, as well as deeper awareness of Allah are well rooted in the culture.^[23,30,34,36] This could probably light into the argument that despite the emergence of lifestyle diseases and injuries, rapid socioeconomic development in recent decades has had a visible impact on the health status, especially of life expectancy, changing morbidity pattern, decreasing mortality rates, and thus improving quality of life.^[3,29] Moreover, fundamental changes in health services such as strengthening primary health care as basic health service for all members of the community at the first level of contact with health services would also have contributed to improvement of elderly health and thus, their assessments.^[16]

The notion of compression of morbidity at the later years of life has been evidenced here, especially at age 60 years and above, reporting multiple pathologies of chronic nature – hypertension, diabetes, cancer, and CVDs.^[42] While the total population suffers at the rate of 182.3 persons per 1000, those aged 60–64 years suffer at the rate of 999.2 and that of 65 years and above at 2,034.0. This inflated prevalence is expected with the rapidly increasing life expectancy in a changing morbidity and mortality

scenario. While comparing age sex differentials in health assessment and chronic diseases, it is really inspiring to explore the reasons. Probably, health consciousness, periodic monitoring, care of at risk, and specialized attention to health sector might explain this paradox. Identification of elderly and women as vulnerable attract them to intensive care mechanisms and, at the same time, increases consciousness leading to reporting health facilities for monitoring, thus, perceiving health positively.^[13,31,33,42] Thus, these data refer to the consciousness and acceptance of the health condition, especially by the females and the elderly, reveal the crucial role of active lifestyle and habitual sport participation that determines health perception, in addition to financial preparedness, access to health services as well as social advantages and activities.^[18-20,40,43]

Even the injuries, although, 2.2% in total and 1.3% in native population, their incidences increases with increasing age; exemplifying the physical incapacities associated with age. There are wide regional variations in injuries, attributed to the differentials in living.

The major administrative areas such as Riyadh, Makkah Al-Mokarramah, Al-Madina Al-Monawarah, and Eastern Region differ from the rest in all these aspects – health assessment, chronic diseases, and injuries. These urbanized and modernized regions have pressures of not only population but also occupation, local administration, housing, personal expenditures, road traffic, family, education, and healthcare: all those impacting upon chronic diseases and injuries, and thus, health assessments. Other administrative areas differ, to an extent, on those dimensions: Al-Baha, Aseer, and Tabouk reports higher levels of self-assessments; Najran reports lowest prevalence of chronic diseases; and Al-Jouf reports lowest percent of injuries. Possibly resulted from dependence of health assessments upon literacy, socioeconomic status, qualification of health staff, general behavior, and patient-medical personnel interactions.^[11] On the contrary, availability and accessibility of good sanitation and clean water in the cities of major areas coupled with well-established healthcare facilities improve their expectations, recognitions, consciousness, periodic examinations, intake of necessary medications, and constant self-monitoring (levels of blood pressure, glucose, cholesterol, and uric acid and functioning of heart, kidney, lungs, and liver). This prompt, the educated urban population to assess their health very objectively.^[3,16,22,23,28-31]

People of early adulthood ages are found to assess their health as good more frequently than others (adolescents/ youth or old aged). But the median age of those reportedly suffering from chronic diseases are above 50 years, both total and native population. As far as injuries are concerned, early adult ages (below 40 years) are more susceptible. Moreover, those undergoing periodic medical examinations are also below 40 years; both total and native population. This information explains the age specific risks of chronic diseases and injuries, and thus the need for constant monitoring through the established three-tier healthcare system across the sectors of the Kingdom.^[3]

The survey report published by the General Authority of Statistics, in their website, does not offer much scope for cross classifications or explorations uniformly for age, sex, and administrative area comparing the population. The table for health assessment offers data by age and administrative area; chronic diseases and injuries by age and administrative area for total and native population (but not sex wise); periodic examinations by age, sex, and administrative area. These limit the scope of further analysis and explorations, comparisons, and interpretations in a uniform manner. It is also important to the academic community to access the raw data so as to statistically analyze to create empirical comparisons and evaluations for the benefit of quality of primary healthcare services, which in turn enhances health status and also popularize health reporting in the Kingdom.

Conclusions

Health sector in Saudi Arabia has undergone improvements in administration, management, programs, budgets, and targets, and thereby primary health system development, coverage, and performance. Hence, health seeking behavior and health status of the population has enhanced significantly, in the recent years. Population as a whole, reportedly, has a good self-assessed health; whose differentials are observed across age groups and geographic areas. More females, old aged and small administrative area residents have good self-assessed health, which points to subjective evaluations dependent upon expectations, optimisms, realism, and acceptance shaped by culture, tradition, and religiosity.

Three factors attributed, with the available data, namely, chronic diseases, injuries and periodic medical examinations in the context of emerging health system development-health status interrelationship; but the socioeconomic transformations in the Kingdom give importance to recognition, acceptance, realism, and optimism emerges as more important.

Thus, it is important to initiate continued efforts to creation, dissemination, and discussion of primary survey data to enhance primary healthcare. Such efforts shall pave way for introspection, which in turn empower and enrich the health status in the country.

Key points and take home messages

- Household health survey conducted in Saudi Arabia is part of health sector strengthening through scientific data dissemination and discussions.
- Survey points out that a higher percent of population assessed themselves as in good health.
- Data gives inputs on various dimensions relevant to primary healthcare and family practices including lifestyle diseases, traffic accidents, and periodic medical examinations in addition to nutrition, physical exercises, and health service access and utilization.
- Self-assessed health differentials on age, sex, and place of residence are of importance to primary healthcare planning and integration.

- Results of the survey, and of this research are to be treated in the context of lifestyle changes in the country.

Abbreviations

No abbreviations are used in the manuscript.

Declarations

Authors' contributions

AAS – Initiation, concept development, data compilation, analysis, writing

Ethics approval and consent to participate

This section is not applicable, as this research is based on data published by the General Authority for Statistics, Saudi Arabia.

Consent for publication

This section is not applicable as this research is based on data published by the General Authority for Statistics, Saudi Arabia. However, the author expresses his consent to publish.

Availability of data and material

As this research utilized publicly available data published by the General Authority for Statistics, Saudi Arabia, there are no restrictions.

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Conflicts of interest

There are no conflicts of interest.

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