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Autoimmune Disease and Chronic Illness in KSA (Cross Sectional Study)

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Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

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ABSTRACT

Background: The shortage of prevalence data based on a representative sample of the general population, as well as the small number of disorders covered in co-morbidity studies, are major issues in autoimmune disease research. In this study, the incidence of autoimmune illnesses in a representative sample of Saudi Arabia's general population is documented, and the hypothesis of an overall relationship between these diseases is explored.
Methods: This was an analytical cross-sectional study to spot light on the prevalence of autoimmune disease among Saudi population. Since the aim of the study was to determine the prevalence of autoimmune disease and their relationship with chronic illnesses among Saudi, this is the suitable design for this research. The study was carried out among Saudi population. Data

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were collected from general population using questionnaire. Participants were chosen via probability simple random sampling technique. Participants were selected from the general population. The expected number of sample size was 700 participants. However, the study included 802 participants.

Results: The study included the participation of 802 participants from both genders and different age groups in the Kingdom of Saudi Arabia. There were 436 female participants (54.4%) and 366 males (45.6%) took place in this study. The most prevalent age group was 45-54 years (n= 232, 28.9%). There were 199 participants reported having a family history of autoimmune diseases (24.8%). Furthermore, there were 186 participants who are using medications for high cholesterol level (23.2%) with no significant for gender (P= 0.08). Diabetes was prevalent among 203 participants (25.3%), blood pressure disorder (n= 211, 26.3%), ulcerative colitis (n= 137, 17.1%) and other comorbid conditions.

Conclusion: In conclusion, this survey confirm relatively high prevalence of autoimmune disease among Saudi population. In addition, participants suffered from additionally comorbid conditions.

Keywords: Autoimmune disease; natural defense system; immunity; chronic illness; systemic lupus erythematosus.

1. INTRODUCTION

The study of the genesis and temporal trends of autoimmune illnesses, as well as the knowledge of the link between various disorders, benefit substantially from ongoing monitoring, as an example [1]. A new review discusses various research on the epidemiology of autoimmune illnesses conducted over the last several decades, emphasizing the significance of future studies that might overcome shortcomings found in the present literature [1].

In order to assess the prevalence of autoimmune illnesses, it is critical to have access to a systematic and unbiased source of data that is representative of the general population [1]. Due to the low mortality and hospitality of autoimmune illnesses, regular registration mechanisms like as death statistics and hospital admissions and discharges only provide a limited picture of their prevalence. The most accepted method for getting prevalence numbers without difficulty is through population-based surveys, albeit these studies need a large number of resources and are typically reliant on self-reported data. Self-reporting is related with a high risk of referral bias in the case of autoimmune disorders, which include rare diseases and diseases with considerable clinical heterogeneity and difficult case definitions [1–3]. The few studies that have been done on the general public have been focused on laboratory screening and hence only look at autoimmune diseases that can be diagnosed by lab testing [4-6]. Asymptomatic types of sickness are also included in their findings.

The shortage of prevalence statistics based on a representative sample of the general population may be to blame for the lack of solid evidence on the co-morbidity of autoimmune disorders [1-4]. Several studies support the concept that autoimmune diseases are caused by the same thing. The incidence of a second autoimmune disorder in samples of patients who already have one is frequently compared to the prevalence of the patients' spouses or first-degree relatives in these researches. A higher risk of developing a second autoimmune disease is supposed to imply that autoimmune diseases share pathogenic pathways. The most serious flaw in these studies is the lack of an appropriate control population [3].

2. LITERATURE REVIEW

Autoimmune and auto-inflammatory disorders impact around one in every fifteen people in industrialized nations, and they are often a life-threatening health concern for the individual patient, as well as a significant financial burden on society. Despite tremendous advances in the development of novel treatment methods, the long-term result for many individuals with autoimmune disorders remains dismal [1].

Infection is still a leading source of morbidity and death in people with rheumatic illnesses. Vaccine development has made a significant contribution to preventing infection in rheumatic illnesses [2]. Vaccination, on the other hand, is a potent immune system stimulant with the potential to cause or worsen immunological disturbances shown as serological markers of immune system dysregulation or clinically manifested autoimmune disease [3]. Vaccines and

autoimmune inflammatory rheumatic disorders (AIIRD) have a complicated relationship.

Autoimmune reactions and inflammation play a major role in the pathogenesis of many disorders. As early as the early stages of atherosclerosis, inflammatory cells (monocytes, macrophages, dendritic cells, T- and B-cells) and cytokines can be found in the lesion area, and these cells can trigger cell-mediated immune reactions (CMIR) that I modulate the development of atherosclerosis and (ii) predetermine its progression [1,2].

Immune responses can influence atherosclerosis in a variety of ways: Immunotherapy against glycoprotein I increased atherosclerosis, immunotherapy against heat shock proteins (HSPs) 60/65 antigen enhanced atherosclerosis, and immunotherapy against oxLDL lowered atherosclerosis [3,4]. Aside from known CVD risk factors, autoimmune processes are thought to have a significant role. Autoimmune diseases are associated to a considerable risk of cardiovascular disease in clinical practice. Mostly proinflammatory Th1 cytokines (e.g., IFN-gamma) were revealed as being engaged in CMIR in animal studies of a well-known autoimmune disease, SLE, whereas mostly Th2 cytokines were identified as being involved in CMIR in people with SLE [3].

Increased atherosclerosis, inflammation, oxidized LDL (oxLDL) levels and autoantibodies against oxLDL, increased triglycerides, total cholesterol (TC), and Lp(a) and decreased HDL cholesterol, elevated systemic inflammation and the presence of anti-phospholipid antibodies (aPL), high homocysteine levels, and osteoporosis are all risk factors for CVD in SLE [2]. The proportionate risk of CVD, on the other hand, differs depending on the kind of autoimmune disease. Some autoimmune illnesses, such as systemic lupus erythematosus (SLE), rheumatoid arthritis, antiphospholipid (Hughes) syndrome (APS), and systemic sclerosis, are linked to the development of CVD, whereas others, such as Sjögren's syndrome and systemic vasculitis, appear to have a lower link.

3. METHODS

3.1 Study Design

This was an analytical cross-sectional study to spot light on the prevalence of autoimmune disease among Saudi population. Since the aim of the study was to determine the prevalence of autoimmune disease and their relationship with chronic illnesses among Saudi, this is the suitable design for this research.

3.2 Study Setting

The study was carried out among Saudi population. Data were collected from general population using questionnaire.

3.3 Sampling and Sample

Participants were chosen via probability simple random sampling technique. Participants were selected from the general population. The expected number of sample size was 700 participants. However, the study included 802 participants.

Inclusion criteria: Patients and general population.

Exclusion criteria: none.

3.4 Instruments

The data collecting tool was created by the researcher and is based on the most recent literature. It included the following information: (1) basic participant information and (2) disease-related information.

3.5 Statistical Analysis

The data gathered from the questionnaire was input and analyzed using the SPSS program version 23. Descriptive statistics such as means, medians, percentages, and standard deviation are used to present sociodemographic data. To demonstrate statistical significance between patient features and tool scores, the independent T test and one-way Anova are utilized. To demonstrate a link between categorical variables, the Chi square test is utilized. A P value of 0.05 or less is considered statistically significant.

4. RESULTS

The current study aimed to examine the prevalence of autoimmune diseases among population in Kingdom of Saudi Arabia and the relationship between them chronic illnesses. The study included the participation of 802 participants from both genders and different age

groups in the Kingdom of Saudi Arabia. There were 436 female participants (54.4%) and 366 males (45.6%) took place in this study. The most prevalent age group was 45-54 years (n= 232, 28.9%) followed by the age group 35-44 (n= 202, 25.2%) while the least frequent age group was above 55 years (n= 67, 8.4%). The distribution of age groups among study participants is presented in Fig. 1 and Table 1 shows the distribution of age groups by the gender of participants. More than half of participants were non-smokers (n= 493, 61.5%) and the rest of participants were smokers (n= 309, 38.5%). The mean value of body mass index among study participants was 29.48 $\pm$ 5.49 standard deviation while the median value of body mass index was 28. This reflects an overweight population in the study sample.

There were 199 participants reported having a family history of autoimmune diseases (24.8%). Furthermore, there were 186 participants who are using medications for high cholesterol level (23.2%) with no significant for gender (P= 0.08).

Table 1. Age Groups distribution according to the gender

Age group	Male	Female
18-24	61	68
25-34	94	78
35-44	77	125
45-54	103	129
55 and above	24	43

Participants were asked if they used certain types of medications. Their answered varied among different groups and classifications of medications. However, there were 325 participants reported not using any of the medications in the list (40.5%). The distribution of medications used is presented in Table 2.

Participants were also asked if they have any comorbid disease. Diabetes was prevalent among 203 participants (25.3%), blood pressure disorder (n= 211, 26.3%), ulcerative colitis (n= 137, 17.1%) and other comorbid conditions (Table 3). Table 3 shows the distribution of comorbid conditions according to gender.

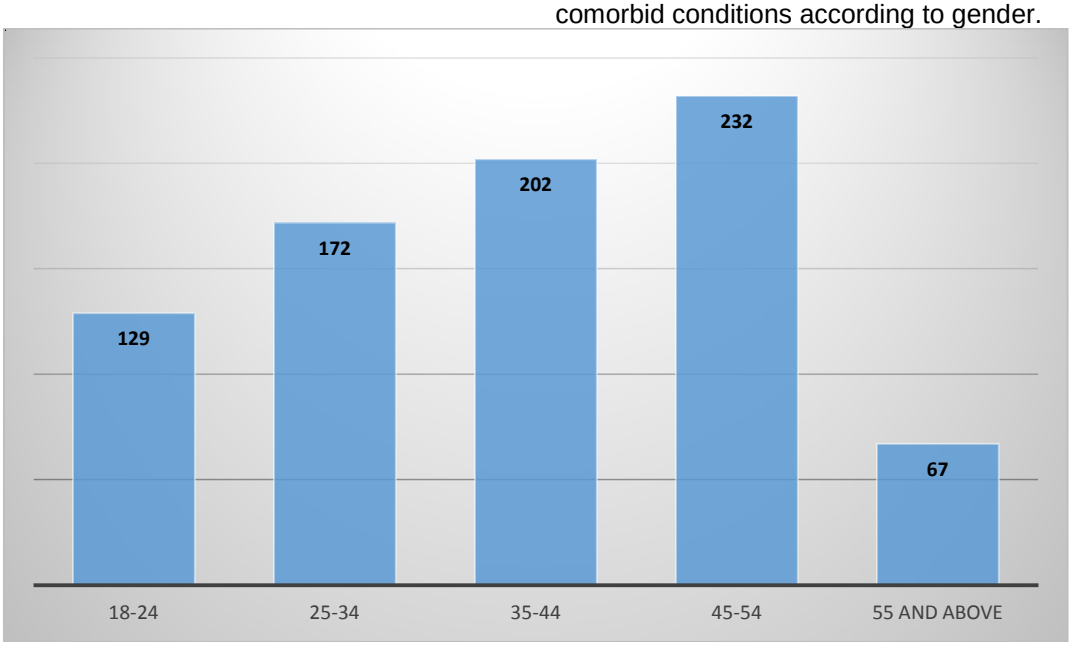

Fig. 1. Age groups distribution among study participants

Table 2. Medications use among study participants

Medication	Frequency	Percent
Antibiotic	150	18.7
Anticonvulsant drugs	44	5.5
Antihypertensive drugs	151	18.8
Others	132	16.5
No use of medication	325	40.5

Table 3. Prevalence of comorbid conditions among study participants distributed by gender

Comorbid condition	Male	Female	P value
Diabetes mellitus	100	103	-
Blood pressure disorders	89	122	-
Ulcerative colitis	66	71	-
Asthma	40	41	-
Cancer	10	11	-
Heart disease	16	20	-
High cholesterol levels	29	31	-
Migraine headache*	42	56	0.001
Celiac disease*	19	9	0.02
Type 1 diabetes	7	5	-
Graves' disease	7	3	-
Hashimoto's autoimmune thyroiditis*	7	17	0.000
Multiple sclerosis*	3	12	0.000
Rheumatoid arthritis	29	24	

** P value is reported for only statistically significant condition*

5. DISCUSSION

This study adds to the study of autoimmune diseases by identifying the prevalence of the most common autoimmune illnesses in a representative sample of the general population in Saudi Arabia, as well as analyzing the co-morbidity between autoimmune disorders that affect multiple organs. This is the first population-based study that looks at a consistent number of autoimmune illnesses in a group of people, as far as we know [1]. Autoimmune disorders are complex illnesses caused by a mix of genetic predisposition and environmental factors [3-5].

The study's main strength is the unbiased data source. A comparison of the prevalence of type 1 diabetes and multiple sclerosis as calculated using the data under research with the prevalence of these diseases as established using data from prior population-based studies in Sardinia [5,7-8] can also be used to confirm the reliability of the data presented in this paper.

According to this survey, one or more autoimmune disorders impact 15% of the general population. These findings are greater than those seen in the present literature, which suggest an overall incidence of autoimmune disorders of 4%–5% [9-10].

Overall, women had a greater incidence than males, matching previous research [10-11].

Type 1 diabetes and multiple sclerosis prevalence figures show that KSA is among the locations with the greatest incidence of these conditions [12-15].

The prevalence of ulcerative colitis in our study is lower than in previous studies, but it appears to be consistent with frequency in other locations [1,9,10,16].

6. CONCLUSION

Finally, this study confirms that the Saudi population has a significant frequency of autoimmune illness. Furthermore, the subjects had extra comorbid conditions.

CONSENT

An informed consent was sought from the participants.

ETHICAL APPROVAL

Administrative approval will be sought from the unit of biomedical ethics research committee Ethical approval was sought from the ethical committee of the faculty of medicine, king Abdul-Aziz university.

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COMPETING INTERESTS

Authors have declared that no competing interests exist.

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