

Evaluation of Rheumatoid Arthritis Knowledge among a Cohort of 1004 Healthy Egyptians

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Abstract

Background: Lack of awareness and misconceptions regarding rheumatoid arthritis (RA) slow down diagnosis and impact treatment outcomes.

Aim of Study: Assessment of knowledge regarding RA among healthy individuals and exploring misconceptions about the disease.

Patients and Methods: A20 questions survey was purposely developed and posted on social media portals. Questions were divided into 5 categories to assess knowledge about RA's disease beliefs, causes/risk factors, consequences, management and the medical specialty that should deal with RA patients.

Results: A total of 1004 individuals with a mean age of 34.5±9.3 years responded to the survey. RA was identified as a multi-system disease that causes joints swellings (62.6%, and 90% respectively) and a disease of the elderly by 16.6% of respondents. Females were perceived at a higher risk of RA (73.8%). Stress was identified as a risk factor by 50.5% of respondents, while smoking was identified only by 21.7% of respondents. Deformities and difficult mobility were identified as RA consequences (75.3% and 81.9%, respectively). Diagnosis and treatment of RA were believed to be responsibility of rheumatologists (72.7% and 83.1%, respectively). Medical graduate respondents had higher level of awareness than public; however, they still had limited awareness of RA causes/risk factors.

Conclusion: Participants had variable level of awareness regarding RA. More knowledge is still needed particularly concerning the role of risk factors and the availability of efficient treatment options that alter natural disease course. Medical non-rheumatologist practitioners had better awareness in general, yet, they also have deficient knowledge concerning risk factors.

Key Words: Rheumatoid arthritis – Survey – Awareness – Risk factors.

Introduction

RHEUMATOID arthritis (RA) is a chronic inflammatory disease affecting around 1% of the

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population worldwide which carries a significant risk for progressive joint damage, disability in addition to increased morbidity and mortality [1,2].

Autoantibodies can be detected in serum of RA patients years before the onset of the disease. During this stage, referred to as "preclinical RA," genetic and environmental variables, commonly referred to as risk factors, interact to initiate the disease [3,4]. This gave rise to the concept of 'window of opportunity' during which treatment can alter the natural course of the disease and improve long term outcome, a widely acceptable concept among rheumatologists [1,2,5].

Delays in initiating treatment as short as 12 weeks can adversely affect long-term outcomes in RA with lower chances of tight control and acquiring remission [5,6]. Delays in Africa and the Middle East last for months and even years following symptom onset [7,8].

In 2017, the Global Burden of Disease (GDB) study demonstrated an increase of 8.2% in annual incidence rate and 7.4% in global age-standardized prevalence of RA compared to 1990 [9]. In concordance to global trends, the burden of RA in the Middle East and North Africa Region showed a steady increase from 1990 to 2019 [10].

In 2017, the European Alliance of Associations for Rheumatology (EULAR) launched its "Don't Delay, Connect Today" campaign aiming at promoting awareness about rheumatic and musculoskeletal diseases and their risk factors as major diseases that raise public health concerns. EULAR aim to fill the gaps between early detection and timely treatment to prevent deleterious disease burdens and outcomes [11].

Considering that, needs for assessment of public awareness about RA risk factors, initial symptoms, course, consequences and possible outcomes became increasingly pressing, particularly in view of lack of such information, both globally and locally.

The current study aimed to assess knowledge among health individuals and to explore misconceptions about the disease.

Patients and Methods

The study was conducted in 12/2020 where a purposely designed online questionnaire was developed (Supplementary file S 1) by a team of experienced rheumatologists to assess public knowledge about RA keeping in mind popular perceptions and misconceptions frequently heard from patients and their relatives in that respect. The questionnaire was posted on social media platforms (e.g., WhatsApp and Facebook) and disseminated to public including medical practitioners, to selfcomplete. Only rheumatologists and public who have been diagnosed as RA patients were not allowed to answer the survey questions.

The first part of the questionnaire assesses the sociodemographic data such as age, educational level (university/non-university and medical/non-medical) and sources of knowledge about RA. The answer to the educational level was in writing rather than a multiple-choice question. Respondents were allowed to choose more than one choice to specify their source of knowledge.

The second part of the questionnaire consisted of a total of 20 questions divided into five subsections evaluating RA's disease beliefs, causes/risk factors, disease consequence, management and knowledge about the medical specialty that should deal with RA patients. All questions were in a multiple-choice format. Respondents had to select a single answer "yes", "no" or "I don't know" for all questions except for questions "Which of the following is a symptom of RA?", answers were "headache, joints swelling, constipation, none of previous answers"; "What is the medical specialty that should diagnose RA?" and "What is the medical specialty that should treat patients with RA" where respondents had to choose between "rheumatology, orthopedics, internal medicine and general practitioners". Responses were submitted anonymously and analyzed. Numbers and percentages of each choice were calculated. Respondents who are not university educated or skipped specifying type of higher education could not be cate-

gorized. The responses of a group of medical graduates were isolated and analyzed.

Statistical analysis: The results were analyzed using SPSS version 26, IBM Corp, 2019. Numbers and percentages were used to represent qualitative data. The mean and standard deviation (SD) were used to summarize numerical variables.

Results

A total of 1500 responses were distributed and collected from individuals who logged on the online platforms, however 496 were not complete, and had to be ruled out. A total of 1004 respondents self-completed the survey's questions. Respondents' age ranged from 15-73 years with a mean age of 34.5 ± 9.3 years. Only 750 respondents (74.7%) reported their educational level out of which 448 respondents were non-medical university graduates (59.7%), 195 respondents were medical university graduates (26%), 107 respondents (14.3%) were non-university graduates and none of the respondents were illiterate. Analysis of sources of information about RA among respondents revealed convergent source distribution, except for TV (Fig. 1).

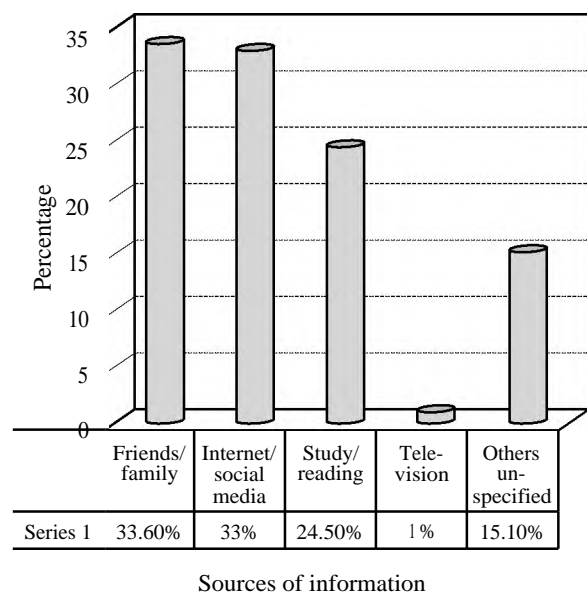


Fig. (1): Sources of information of the studied population.

Analysis of the survey's questions (Table 1), (Fig. 2) showed a general agreement of responses in questions of RA's disease beliefs, consequences, management, and medical specialty dealing with RA. The highest level of disagreement and uncertainty were observed in disease causes and risk factors subsection.

Table (1): Responses to RA knowledge questionnaire in the whole cohort.

Categories	RA knowledge questionnaire n (%) = 1004		Participants responses		
	Individual questions	Yes	No	I don't know	
Disease Beliefs	1- Which of the following is a symptom of RA?*				
	2- Is it a multi-system disease?	629 (62.6%)	78 (7.8%)	297 (29.6%)	
	3- Is it a chronic disease?	913 (90.9%)	20 (2%)	71 (7.1%)	
	4- Which gender is at higher risk of RA?*				
	5- Can rheumatoid factor be positive in a patient without RA?	435 (43.3%)	71 (7.1%)	498 (49.6%)	
Disease causes/ risk factors	6- Is it a heritable disease?	327 (32.6%)	357 (35.6%)	320 (3.2%)	
	7- Is it contagious?	2 (0.2%)	949 (94.5%)	53 (5.3%)	
	8- Is it a disease of the elderly?	167 (16.6%)	696 (69.3%)	141 (14%)	
	9- Is exposure to cold draught a leading factor for RA?	264 (26.3%)	409 (40.7%)	331 (33%)	
	10- Is eating particular food varieties a leading factor for RA?	147 (14.6%)	519 (51.7%)	338 (33.7%)	
	11- Is obesity a leading factor for RA?	271 (27%)	422 (42%)	311 (31%)	
	12- Is smoking a leading factor for RA?	218 (21.7%)	382 (38%)	404 (40.2%)	
	13- Is stress a leading factor for RA?	507 (50.5%)	171 (17%)	326 (32.5%)	
Consequence	14- Does RA cause deformities?	756 (75.3%)	63 (62.7%)	185 (18.4%)	
	15- Does it cause difficult mobilization?	822 (81.9%)	80 (8%)	102 (10.2%)	
Management	16- Is RA treatable?	647 (64.4%)	187 (18.6%)	170 (16.9%)	
	17- Does it need lifelong treatment?	832 (82.9%)	31 (3.1%)	141 (14%)	
	18- Are natural remedies such as herbal medicines and bee venom useful in RA?	149 (14.8%)	339 (33.8%)	516 (51.4%)	
Medical specialty that deals with RA	19- What is the medical specialty that should diagnose RA?*				
	20- What is the medical specialty that should treat patients with RA?*				

RA: Rheumatoid arthritis. F: Female. M: Male, *Answers to questions 1, 4, 19, 20 are illustrated in Fig. (2).

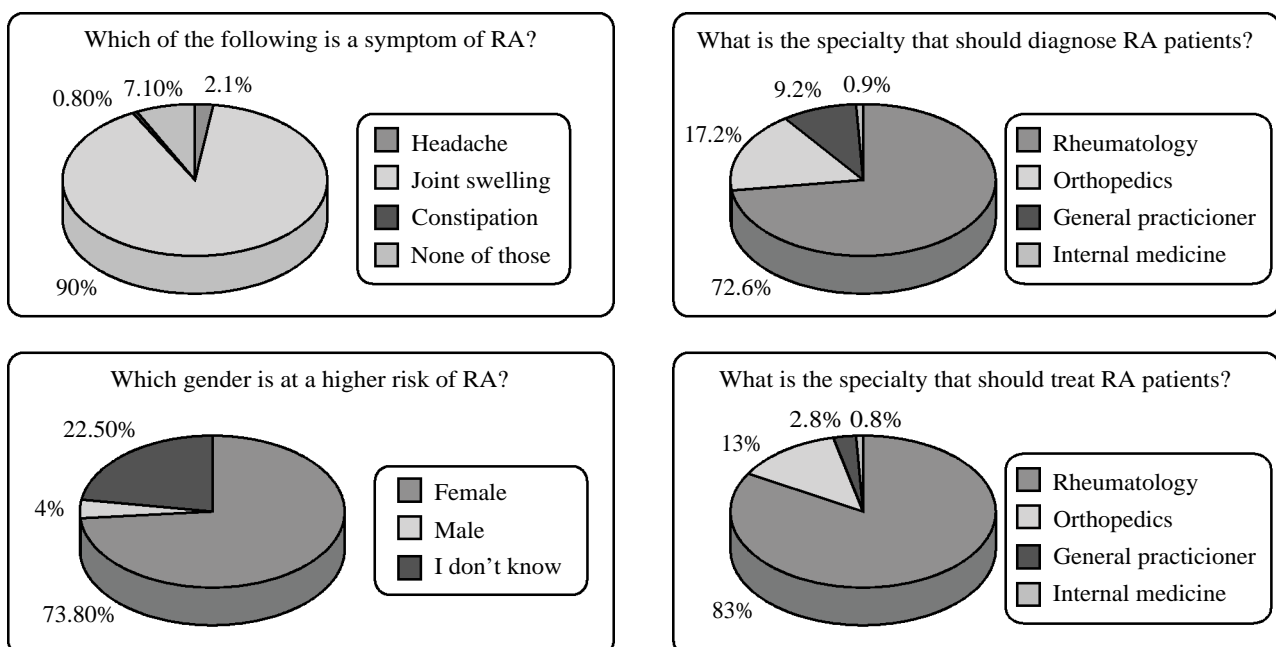


Fig. (2): Illustration of responses to individual questions 1, 4, 19, 20 of the rheumatoid arthritis knowledge questionnaire in the whole cohort.

Most of respondents identified RA as a multi-system disease that causes joints swellings, can possibly lead to deformities and can result in difficulties in mobilization (62.6%, 90%, 75.3% and 81.9%, respectively). Additionally, about two thirds of respondents correctly identified RA as a chronic non-contagious disease that predominantly affects female gender (90.9%, 94.5% and 73.8%, respectively). Almost one third of respondents thought that specialties other than rheumatology (internal medicine/orthopedic/general practitioner) should diagnose RA, yet auspiciously 72.7% of respondents believed the rheumatologists are responsible for diagnosis and 83.1% believed that rheumatologists are responsible for RA management as well (Fig. 3). Majority of respondents responded that

RA needs lifelong treatment (82.9%) and only 14.8% considered that natural remedies including herbal remedies and bee venom are useful in RA management.

Almost half of respondents were either incorrectly or not at all acquainted with possible RA risk factors such as stress and smoking. Additionally, respondents falsely identified eating particular food varieties, exposure to cold draughts and increased weight as factors that lead to RA.

Despite a generally higher level of knowledge among medical graduates, yet they still had a noticeable deficit in their information about RA causes and risk factors (Table 2), (Fig. 2).

Table (2): A: Responses of RA knowledge questionnaire among medical graduates.

Categories	RA knowledge questionnaire n (%) = 195		Participants responses		
	Individual questions	Yes	No	I don't know	
Disease Beliefs	1- Which of the following is a symptom of RA?				
	2- Is it a multi-system disease?	180 (92.3%)	3 (1.5%)	12 (6.1%)	
	3- Is it a chronic disease?	193 (99%)	1 (0.5%)	1 (0.5%)	
	4- Which gender is at higher risk of RA?				
	5- Can rheumatoid factor be positive in a patient without RA?	158 (81.1%)	5 (2.5%)	32 (16.4%)	
Disease causes/ risk factors	6- Is it a heritable disease?	94 (48.2%)	64 (32.8%)	37 (19%)	
	7- Is it contagious?	0 (0%)	193 (99.9%)	2 (1%)	
	8- Is it a disease of the elderly?	20 (10.2%)	162 (83.1%)	13 (6.7%)	
	9- Is exposure to cold draught a leading factor for RA?	35 (17.9%)	115 (59%)	45 (23.1%)	
	10- Is eating particular food varieties a leading factor for RA?	16 (8.2%)	123 (63.1%)	56 (28.7%)	
	11- Is obesity a leading factor for RA?	38 (19.5%)	102 (52.3%)	55 (28.2%)	
	12- Is smoking a leading factor for RA?	54 (27.7%)	83 (42.6%)	58 (29.7%)	
	13- Is stress a leading factor for RA?	111 (56.9%)	49 (25.1%)	35 (17.9%)	
Consequence	14- Does RA cause deformities?	185 (94.9%)	6 (3.1%)	4 (2.1%)	
	15- Does it cause difficult mobilization?	183 (92.3%)	8 (4.1%)	4 (2.1%)	
	16- Is RA treatable?	175 (89.7%)	11 (5.6%)	9 (4.6%)	
Management	17- Does it need lifelong treatment?	177 (90.8%)	5 (2.6%)	13 (6.7%)	
	18- Are natural remedies such as herbal medicines and bee venom useful in RA?	19 (9.7%)	98 (50.3%)	78 (40%)	
Medical specialty that deals with RA	19- What is the medical specialty that should diagnose RA?				
	20- What is the medical specialty that should treat patients with RA?				

RA: Rheumatoid arthritis. F: Female. M: Male. *Answers to questions 1, 4, 19, 20 are illustrated in Fig. (3).

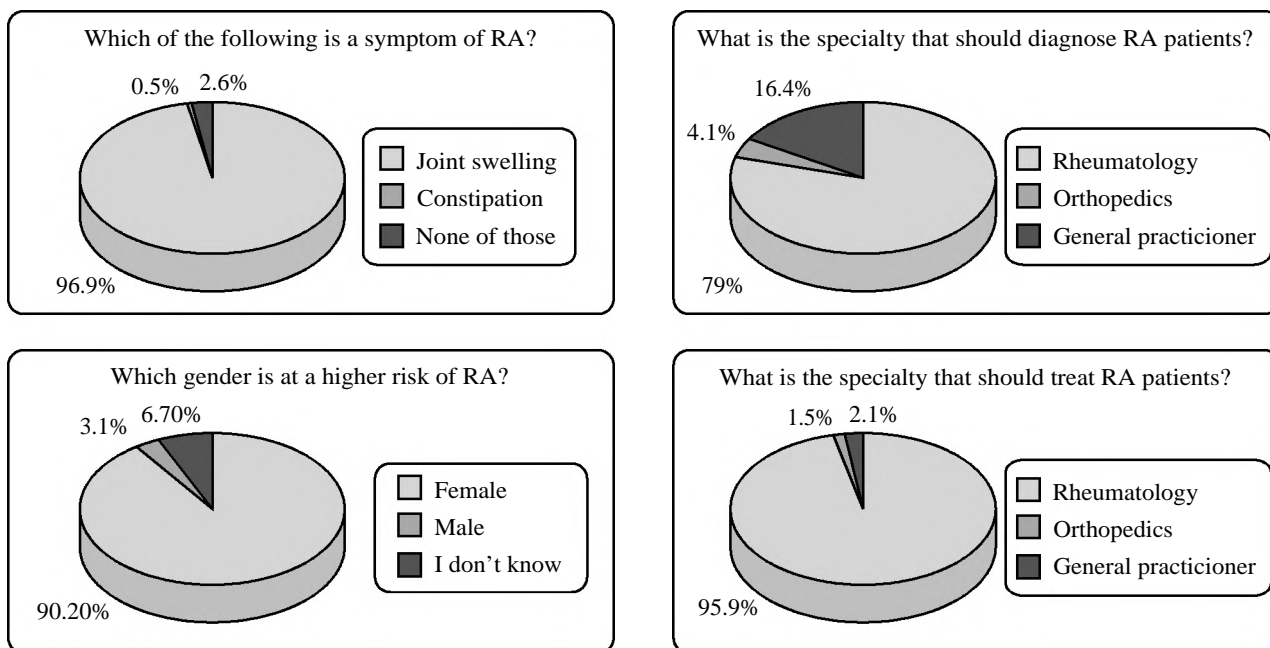


Fig. (3): Illustration of responses to individual questions 1, 4, 19, 20 of the rheumatoid arthritis knowledge questionnaire among medical graduates.

Discussion

The current work shows a fair knowledge of RA among the studied cohort as a multisystem chronic disease with possible deleterious consequences and uncertainty towards availability of treatments that may alter natural disease course. The prominent awareness deficit among the currently studied cohort, including medical graduates, is knowledge about RA causes and associated risk factors.

The first attempt to assess public attitudes towards arthritis was held in UK by Arthritis and Rheumatism Council (ARC) in 1974. Back then, although the studied group was fairly aware (40%) about the magnitude of arthritis and its symptoms, yet they tended to relate the occurrence of arthritis to climatic changes. Respondents did not think arthritis affects daily activities and did not consider it a crippling disease. Additionally, there was a general uncertainty about causes of arthritis and older participants thought it might be part of the aging process and tended to view it as a non-curable disease [12]. Data from this report are in some ways outdated due to the significant changes in population structure, healthcare services, and the accessibility of information via multiple portals other than health-care providers.

Evaluation of the current cohort's information sources revealed that internet/social media have a significant influence on public perception; a finding that corresponds with the ease of accessibility of

convenient internet services and a massive amount of readily available information that exponentiate the position of social media as valuable community portals for knowledge [13,14]. In line with that, a recent report assessing Google trends in searching engines showed a notable public global interest in health information about infectious and non-infectious arthritis. In fact, according to this report, Egypt ranked the 4th in searching for information about RA [15]. In another interesting report assessing the utility of sharing RA related images a great potential of the platform for sharing awareness and health-related problems was illustrated [16]. The raised level of awareness compared to the UK survey hence can be attributed to advancement in availability of information via media portals. Another common source of information in the current study was family and friends a fact that further highlights the importance of public awareness. Some respondents reported having a physician in the family or a relative with RA.

On the other hand, more recent studies [17,18] reported that understanding of RA nature is still limited where only few participants could identify RA as a multisystem disease. Of note was the need for medical input about RA was highlighted in one report by a nurse who said 'The fact that I don't know much about it [RA], is, I suppose, worrying because, you know, what are people that are non-medically trained going to know about it? So, maybe, I just think if there was more education out there, maybe it would help people' [17]. Similar

need for getting information about RA was previously reported in literature studies among UK, Dutch, and Portuguese cohorts [19-21].

In line to previous reports [17-20], the current studied cohort could identify RA as a chronic condition that predominantly affects women, which significantly differed from knowledge of UK cohort where only 38% were aware of this fact [12].

Pain, deformities of the joints, dependency on the help of others and physical restrictions in daily life were considered the most serious consequences of RA [22]. About 30% of participants thought all rheumatic patients end up in wheelchairs in a Portuguese study [21]. Favorably in line with previous reports [12,17], the current work reflects fair awareness of possible negative impact of RA on mobility which is higher than that reported among Jazan Saudi population [18] where only 57.2% were familiar to this fact. Yet their results along with ours revealed higher awareness about the occurrence of extra-articular affection secondary to RA which is higher than that reported by the older UK study [12].

In contrast to previous cohorts [12,17,18], the current one considered RA as a treatable condition [12,17,18]. Nevertheless, considerable level of uncertainty was identified when it came to awareness of the role of natural remedies including herbal ones and bee venom in management of RA. This indeed reflects the cultural belief seen across Middle Eastern region about superior efficacy and safety of herbal medicine in comparison to pharmaceutical options [23,24].

In fact, participants in a study by Simon et al. [17] expressed their intentions for self-management with analgesics which was further attributed to the confusion of participants between symptoms of RA and osteoarthritis (OA). This confusion was also noticed in the current study where nearly two thirds of participants either identified increased weight as causative factor in RA process or at least were uncertain about it. The limited differentiation between both disease entities was seen in previous reports [17,18,25].

Similar to findings reported among Dutch and Portuguese populations [20,21] the current cohort knowledge was deficient regarding relation of RA to risk factors as smoking, stress, climatic changes and food varieties or heritability. Alongside, Byea et al., reported a misperception that RA occurs secondary to joint injury [26]. There was controversy on RA's relation to exercise; some believed it would promote disease progression and should be

restricted [27], while others such as Portuguese and Dutch populations were aware that exercise should not be avoided [20,21].

Early consultation and continuous management of RA by specialized rheumatologist significantly leads to less functional disability and less need for surgical procedures [28,29]. Fortunately, almost two thirds of the current cohort were aware that RA should be diagnosed and managed by rheumatologist reflecting higher awareness level compared to Jazan Saudi population [18]. However, the fact that one third of the current cohort chose other medical specialties corresponds to findings of Raciborski et al., that 95% of the patients sought care from General Practitioner (GP) and 43% from orthopedics while two thirds were falsely referred to non-rheumatologists and others had an average delay of 4 months before they could meet the rheumatologist [30].

Although in Egypt obtaining an appointment with a health care physician is not usually a problem with the background that private medical practice is the rule and the lack of clear referral system via the general practitioner and/or family physician. Sometimes referral of RA cases to rheumatologist do occur from other medical specialties, however, the concept of referral is not widely utilized, and patients lie on advice from family and friends in determining the medical specialty that should manage their symptoms. In that respect, improving public awareness would have positive consequences to our population [31].

The current work agrees to a previous study that medical graduates had higher awareness compared to people without medical background, yet both groups shared a considerable knowledge deficit concerning causes and risk factors of RA [22]. Rheumatology education and musculoskeletal assessment skills are insufficiently taught in medical schools' curricula [32]. A survey of Canadian medical schools found that the total average time spent in musculoskeletal physical examination teaching was just 4-7h over 4 years of study, and 58% of teaching was performed by non-RMD experts [33,34]. Another Nigerian report attributed delay to rheumatology clinics to ignorance among health practitioners [35].

This annotates that raising awareness and education programs about rheumatic diseases should not only include general people but should also be expanded to include health practitioners (including GPs, registrars and nurses). In parallel to that, establishment of a system of family physician and

primary care provider with clear referral pathways to specialists would provide relevant outcome improvement for those with RA and other rheumatic diseases as well [36,37].

The strengths of the present work are the large sample size and being the first of its kind in our experience to assess knowledge about RA in Egyptians, that also include a cohort of medical graduates. The present work provided a fast, efficient, and inexpensive means of gathering large amounts of information from sizeable sample volumes. Nevertheless, there are some limitations. The population to which surveys are distributed cannot be clearly described, and their presented demographic data might not be validated being fulfilled online, particularly in anonymous surveys. Respondents with biases cannot be ruled out, such as close relatives of rheumatoid patients, who may not represent the average common people. The survey being distributed via online platforms would necessarily reflect mainly those who are using such platforms and not necessarily the 'average people' e.g., those with poor socioeconomic standards, or those non-educated. The wide age range '15-73 years' can also be viewed as a limitation as older people might be viewed as more knowledge able than younger age groups, yet, this might also be reflecting more 'the widely variable community'.

In conclusion, the current survey study showed knowledge able awareness about RA among participants, yet more knowledge is still needed concerning rheumatoid risk factors and the availability of recent efficient treatment options that can alter disease course. Furthermore, respondents who are medical graduate who had higher level of awareness than public; yet, they shared similar limited knowledge of RA causes and/or risk factors.

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تقييم المعرفة بالتهاب المفاصل الروماتويدي بين مجموعة من ١٠٠٤ من المصريين الأصحاء

الخلفية: قلة الوعي والمفاهيم الخاطئة بشأن التهاب المفاصل الروماتويدي يبطن التشخيص ويؤثر على نتائج العلاج.

هدف الدراسة: تقييم المعرفة بخصوص التهاب المفاصل الروماتويدي بين الأفراد الأصحاء واستكشاف المفاهيم الخاطئة حول المرض.

المرضى والأساليب: تم تطوير استطلاع رأى يحتوى على ٢٠ سؤالاً وتم نشره على وسائل التواصل الاجتماعى. تم تقسيم الأسئلة إلى ٥ فئات لتقييم المعرفة حول معتقدات مرض التهاب المفاصل الروماتويدي، الأسباب وعوامل الخطر للإصابة، العواقب، والتخصص الطبى المعنى بتشخيص وعلاج مرضى التهاب المفاصل الروماتويدي.

النتائج: استجاب ١٠٠٤ فرد متوسط عمرهم 34.5 ± 9.3 سنة بالرد على الاستبيان. عرف ٦٢.٦٪ و ٩٠٪ على التوالي من المشاركين التهاب المفاصل الروماتويدي على أنه مرض يؤثر على أجهزة متعددة ويسبب تورم المفاصل كما اعتبر ١٦.٦٪ من المشاركين أنه مرض خاص بكبار السن. أجاب ٧٣.٨٪ من المشاركين أن الإناث أكثر عرضة للإصابة بالتهاب المفاصل الروماتويدي. تم تحديد الإجهاد كعامل خطر من قبل ٥٠.٥٪ من المشاركين، فى حين تم تحديد التدخين فقط من قبل ٢١.٧٪ من المشاركين تم تحديد التشوهات وصعوبة الحركة كعواقب لالتهاب المفاصل الروماتويدي فى ٧٥.٣٪ و ٨١.٩٪ من المشاركين على التوالي. اعتقد ٧٢.٧٪ و ٨٣.١٪ من المشاركين على التوالي أن تشخيص وعلاج التهاب المفاصل الروماتويدي من مسؤولية أطباء الروماتيزم. كان لدى المشاركون من الأطباء مستوى وعى أعلى من الجمهور ومع ذلك، لا يزال لديهم وعى محدود لأسباب التهاب المفاصل الروماتويدي وعوامل الخطر للإصابة.

الخلاصة: كان وعى المشاركين فيما يتعلق بالتهاب المفاصل الروماتويدي متفاوت. لا تزال هناك حاجة إلى مزيد من المعرفة خاصة فيما يتعلق بدور عوامل الخطر وتوافر خيارات العلاج الفعالة التى تغير مسار المرض الطبيعى. كان لدى الممارسين الطبيين غير المتخصصين فى أمراض الروماتيزم وعى أفضل بشكل عام، ومع ذلك فإن معرفتهم لا تزال نا قصة فيما يتعلق بعوامل الخطر.