

Health Risk Assessment among Adults in UAE

 ¹ Saad T. A. Abujayya, ² Mahmoud Ahil, ³ Linto Babu, ⁴Walton M.
 ^{1.2.3} BSN Students, College of Nursing, Gulf Medical University
 ^{4.} Assistant Professor, College of Nursing, Gulf Medical University Author for correspondence: dr.marywalton@gmu.ac.ae

Abstract Introduction

The United Arab Emirates (UAE) is facing an increasing prevalence of chronic health conditions, including diabetes, hypertension, cardiovascular, and renal diseases. Health Risk Assessment (HRA) is a valuable strategy for identifying, evaluating, and managing potential health risks. This study aims to explore the Health Risk Assessment among adults in the UAE.

Objectives of the study

To identify the Health Risk Assessment among adults in UAE. To explore the sub-parameters of Health Risk Assessment among adults in UAE. To determine the association of Health Risk Assessment with selected demographic variables.

Methods

A quantitative approach with a cross-sectional design is utilized to assess the Health Risk Assessment among adults in UAE. A quantitative approach involves the collection of numerical data and statistical analysis to explore patterns and relationships. The crosssectional design allows for data collection at a single point in time, providing a snapshot of the variables under investigation across different groups or categories.

Results

The mean total Health Risk Assessment score was 184 ± 23.94 , indicating good wellness awareness. Emotional awareness was the highest, while general health awareness was lower. No significant association was found between total HRA scores and demographic variables.

Conclusion

Adults in the UAE show generally good health awareness, particularly in emotional and mental health. There is a need for targeted public health interventions to improve nutrition and general health awareness. HRAs are important tools for public health strategies.

Keywords

1

Health Risk Assessment, UAE, Wellness, Preventive Care, Chronic Diseases, Public Health, Adult Health, Awareness.



Introduction

The United Arab Emirates (UAE) faces a unique challenge in public health. Like many developed nations, it experiences a high prevalence of chronic diseases such as Diabetes, Hypertension, cardiac and renal diseases. However, the UAE also contends with a significant youth population, leading to a double burden of disease. To effectively address these issues, healthcare professionals require a clear understanding of the risk factors affecting the adult population.1.

Health risk assessment (HRA) is a comprehensive approach that entails identifying, evaluating, and prioritizing potential health risks and vulnerabilities for individuals and populations and identifying possible measures to reduce or mitigate their effects. Deploying appropriate HRA strategies is a cornerstone for population risk stratification and constructing the corresponding population risk pyramid. It has become essential for informing health policy decisions, allocating resources, benchmarking, implementing preventive strategies and selecting appropriate healthcare services. Likewise, in the clinical arena, HRA is a building block for generating predictive models to support clinical decision-making. Health risk assessment (HRA) strategies are cornerstone for health systems transformation toward value-based patient-centered care. 2

Health risk assessment (HRA), a method successfully used in working-age populations, is a promising method for cost-effective health promotion and preventive care in older individuals, but the long-term effects of this approach are unknown. HRA is a multidimensional approach, which has been used successfully among working-age populations, older individuals complete with a questionnaire to provide information about their risk factors for functional status decline and are subsequently given personalized feedback on how to promote health, maintain function, or prevent disease. Previous studies showed that this approach may improve short-term outcomes such as take-up of preventive care and health behaviors, but the long-term effects on health were unknown. 3 The risk assessment process is a careful examination of what could cause harm, who/what could be harmed and how. It will help you to determine what risk control measures are needed and whether you are doing enough. Risk assessments predict the spread and consequence of potential disease threats. They often heavily inform a country's choice of disease response strategy. 3.4

Health risk assessment (HRA) has recently received attention as a method for multidimensional preventive care intervention among older individuals. Originally developed for workforce health promotion, HRA is based on self-reports to guide risk factor interventions, with subsequent individualised feedback to participants on their health status and on how to promote health, maintain function, or prevent disease. HRA is a potentially promising approach for use in older individuals, with scientific evidence for favourable effects on intermediate outcomes such as health behaviours and use of preventive care. However, studies have found that HRA-based interventions were effective for intermediate outcomes only if older individuals received HRA combined with some form of personal reinforcement.3



International Journal of Research in Medical and Basic Sciences Volume 11 Issue 05, May 2025 ISSN: 2455-2569 Impact Factor: 8.028 Journal Homepage: http://mbsresearch.com, Email: mbsresearchp@gmail.com Double-Blind Peer Reviewed Refereed Open Access International Journal

Following alerts about the diminishing role of health risk assessment (HRA) in informing public health decisions, this study examines specific HRA topics with the aim of identifying possible solutions for addressing this compelling situation. A study administered a survey among different groups of stakeholders involved in HRA or decision-making, or both. The responses show various understandings of HRA in the decision-making context—including confusion with the health impact assessment (HIA)—and confirm recurring foundational issues within the risk analysis field that contribute to the growth of inconsistency in the HRA praxis. 4 Opportunities for improving this situation come at the beginning of the assessment process, where greater attention should be given to defining the assessment and decision-making contexts. The HRA process should end with a decision follow-up step with targeted auditing and the participation of stakeholders to measure its success. Factors contributing to the effective consideration of HRA findings in public health policy remain understudied and insufficiently understood. The multitude of different risk assessment processes, makes it difficult to understand the relation of risk assessment to environmental protection, environmental health policy, occupational health, and regulation. 5

The present research aims to explore the HRA in the UAE context, considering factors such as cultural appropriateness, accessibility, and integration with existing healthcare practices. HRAs offer a valuable tool for Identifying individuals at risk for chronic diseases. Encouraging preventative behaviors and lifestyle modifications. Facilitating early detection and intervention for chronic conditions. Optimizing resource allocation within the healthcare system. The findings of this study will contribute valuable insights for healthcare professionals and policymakers in the UAE. By promoting the use of HRAs, we can work towards a healthier adult population and a more sustainable healthcare system.

Methods

A descriptive, cross-sectional quantitative study was conducted with 153 adult residents of the UAE. Participants aged 18-70 years, who understood English or Arabic, were recruited using convenience and snowball sampling. A structured questionnaire was used via Google Forms to collect data on demographic variables and Health Risk Assessment.



Results

4

Section A: Description of selected Demographic Variables Table 1: Frequency and percentage

distribution selected	l demographic [,]	variables among adults	(n=153)
-----------------------	----------------------------	------------------------	---------

Demograp	bhic variables	Frequency	Percentage		
Age	18-25	6	3.9		
	26-40	70	45.8		
	41-55	61	39.9		
	56-70	16	10.5		
Condon	Male	60	39.2		
Gender	Female	93	60.8		
	High school	5	3.3		
Qualification	Diploma	26	17.0		
	Bachelor	74	48.4		
	Master	45	29.4		
	PHD	3	2.0		
	Employed	138	90.2		
Occuration	Unemployed	4	2.6		
Occupation	Retired	4	2.6		
	Student	7	4.6		
	Single	37	24.2		
Marital Status	Married	115	75.2		
wantai Status	Divorced	1	0.7		
	Widower/ widow	0	0.0		

Table 1 shows regarding demographic variables that 70(45.8%) came under 26-40 years of age, 93(60.8%) were female, 74(48.4%) had a bachelor's degree, 138(90.2%) were employed, and 115(75.2%) were married.



Section B: Description of Health Risk Assessment among adults Table 2a: Mean, and SD of Health Risk Assessment among adults

		(n=153)
High-risk Assessment variables	Mean	SD
Physical Activity	14.70	3.969
Nutrition	13.95	3.584
General Health	13.56	4.612
Safety	20.54	3.720
Social and Environmental Wellness	19.99	3.620
Emotional Awareness	21.89	3.153
Mental Wellness	20.22	3.691
Intellectual Wellness	19.20	3.794
Occupational Wellness	19.83	4.402
Values, Spirituality, and Beliefs	20.56	3.656
Total High-risk Assessment Score	184.44	23.940

Table 2 a show the total Health Risk score as 184 ± 23.940 , with a value of 73.6%, the max score was seen for emotional awareness 21.89 ± 3.153 and the least scores were seen for General health 13.56 ± 4.612 and Nutrition 13.95 ± 3.584 ,





2b: Frequency and percentage distribution of Health-risk assessment among adults (n=153)



International Journal of Research in Medical and Basic Sciences

Volume 11 Issue 05, May 2025 ISSN: 2455-2569 Impact Factor: 8.028 Journal Homepage: http://mbsresearch.com, Email: mbsresearchp@gmail.com Double-Blind Peer Reviewed Refereed Open Access International Journal

High-risk Assessment variables		Never		ionally	0	ften	Very Often		Always	
		Percentage	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage
Physical Activity	0	0.0	24	15.7	65	42.5	48	31.4	16	10.5
Nutrition	0	0.0	28	18.3	74	48.4	46	30.1	5	3.3
General Health	3	2.0	42	27.5	57	37.3	39	25.5	12	7.8
Safety	0	0.0	2	1.3	13	8.5	53	34.6	85	55.6
Social and Environmental Wellness	0	0.0	2	1.3	17	11.1	61	39.9	73	47.7
Emotional Awareness	0	0.0	0	0.0	11	7.2	35	22.9	107	69.9
Mental Wellness	1	0.7	0	0.0	15	9.8	62	40.5	75	49.0
Intellectual Wellness	0	0.0	3	2.0	26	17.0	68	44.4	56	36.6
Occupational Wellness	0	0.0	5	3.3	27	17.6	47	30.7	74	48.4
Values, Spirituality, and Beliefs	0	0.0	3	2.0	17	11.1	47	30.7	86	56.2
Total High-risk Assessment Score	0	0.0	0	0.0	15	9.8	97	63.4	41	26.8

Table 2b shows the total Health Risk Assessment score as 184 ± 23.940 , with a value of 73.6%, the least scores were seen for 13.56 ± 4.612 the max score was seen for emotional awareness 21.89 ± 3.153



6

Figure 2: Comparison of frequency distribution levels of Total Health-risk Assessment among adults

Figure 2 shows the comparison total Health Risk Assessment among Adults 97(63.40%) had the highest scores



International Journal of Research in Medical and Basic Sciences

Volume 11 Issue 05, May 2025 ISSN: 2455-2569 Impact Factor: 8.028 Journal Homepage: http://mbsresearch.com, Email: mbsresearchp@gmail.com Double-Blind Peer Reviewed Refereed Open Access International Journal



Figure 3: Comparison of frequency distribution levels of sub-parameters of Healthrisk Assessment among adults



Table 4c: Association of General Health sub-parameter of Health Risk Assessment with selected demographic variable among adults.

(n=153)

Demographic variables														
		Never		Occas	Occasional		Often		Very Often		Always		Chi Square	
		Freque ncv	Percen tage	Freque ncy	Percen tage	Freque	Percen tage	Freque ncy	Percen tage	Freque ncy	Percen tage	χ2 value	P value	
	18-25	0	0.0	0	0.0	3	5.3	2	5.1	1	8.3		.524 NS	
1 33	26-40	2	66.7	17	40.5	25	43.9	20	51.3	6	50.0	11.062		
Age	41-55	1	33.3	21	50.0	25	43.9	12	30.8	2	16.7	11.062		
	56-70	0	0.0	4	9.5	4	7.0	5	12.8	3	25.0	1		
Candan	Male	3	100	22	52.4	23	40.4	9	23.1	3	25.0	12 012	.011 **	
Gender	Female	0	0	20	47.6	34	59.6	30	76.9	9	75.0	15.015		
	High school	1	33.3	0	0	3	5.3	1	2.6	0	0.0	24.119	.087 NS	
	Diploma	0	0	9	21.4	9	15.8	7	17.9	1	8.3			
Qualification	Bachelor	2	66.7	22	52.4	25	43.9	22	56.4	3	25.0			
	Master	0	0.0	11	26.2	19	33.3	8	20.5	7	58.3			
	PHD	0	0	0	0	1	1.8	1	2.6	1	8.3			
	Employed	3	100	39	92.9	51	89.5	33	84.6	12	100.0			
Ossunstian	Unemployed	0	0.0	0	0.0	2	3.5	2	5.1	0	0.0	C 249	.903	
Occupation	Retired	0	0	2	4.8	1	1.8	1	2.6	0	0.0	0.248	NS	
	Student	0	0	1	2.4	3	5.3	3	7.7	0	0.0			
	Single	0	0	10	23.8	16	28.1	8	20.5	3	20.5			
	Married	3	100	32	76.2	41	71.9	31	79.5	8	66.7		002	
Marital Status	Divorced	0	0.0	0	0.0	0	0.0	0	0.0	1	8.3	13.598	.093 NS	
	Widower/ widow	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	201090	NS	

**Significant at p<0.05

NS = Not Significant

Table 4c shows there is significant association between general health sub parameter of HRA and gender.



Table 4g: Association of Mental Wellness sub-parameter of Health Risk Assessment with selected demographic variable among adults.

(n=153)

Demographic variables			N	ssment							
		Never		C	Often		Very Often		ays	Chi Square	
		Frequency	Percentag e	Frequency	Percentag e	Frequency	Percentag e	Frequency	Percentag e	χ2 value	P value
	18-25	1	100.0	1	6.7	1	1.6	3	4.0		
1 22	26-40	0	0.0	7	46.7	28	45.2	35	46.7	26 200	0.002
Age	41-55	0	0.0	6	40.0	27	43.5	28	37.3	20.399	**
	56-70	0	0.0	1	6.7	6	9.7	9	12.0		
Gender	Male	0	0	6	40.0	28	45.2	26	34.7	2 22	0.528
Gender	Female	1	100	9	60.0	34	54.8	49	65.3	2.22	NS
	High school	1	100	1	6.7	3	4.8	0	0.0	41.911	0.000 ***
	Diploma	0	0	3	20.0	7	11.3	16	21.3		
Qualification	Bachelor	0	0.0	3	20.0	34	54.8	37	49.3		
	Master	0	0.0	8	53.3	17	27.4	20	26.7		
	PHD	0	0	0	0.0	1	1.6	2	2.7		
	Employed	0	0	13	86.7	54	87.1	71	94.7		
Occupation	Unemployed	0	0.0	0	0.0	3	4.8	1	1.3	28 5/1	0.001
Occupation	Retired	0	0	0	0.0	3	4.8	1	1.3	20.341	**
	Student	1	100	2	13.3	2	3.2	2	2.7		
	Single	1	100	6	40.0	14	22.6	16	21.3		
	Married	0	0	9	60.0	47	75.8	59	78.8		0.216
Marital Status	Divorced	0	0.0	0	0.0	1	1.5	0	0.0	7.051	0.310 NS
	Widower/ widow	0	0.0	0	0.0	0	0.0	0	0.0		110

***Significant at p<0.001

Significant at p<0.05 **NS = Not significant

Table 4g shows there is significant association between mental health sub parameter of HRA and age, qualification and occupation



Table 4h: Association of Occupational wellness sub-parameter of Health RiskAssessment with selected demographic variable among adults.

(n=153)

		Occupational Wellness - Health Risk Assessment											
			Occasional		ften	Very	Very Often		ys	Chi Square			
Demographic variables		Frequenc V	Percenta ge	Frequenc	Percenta ge	Frequenc	Percenta ge	Frequenc V	Percenta ge	χ2 value	P value		
	18-25	1	20.0	1	3.7	0	0.0	4	5.4				
1 33	26-40	4	80.0	17	63.0	25	53.2	24	32.4	10.029	0.025 **		
Age	41-55	0	0.0	8	29.6	18	38.3	35	47.3	19.028			
	56-70	0	0.0	1	3.7	4	8.5	11	14.9				
Condor	Male	2	40.0	12	44.4	16	34.0	30	40.5	0.893	0.827		
Gender	Female	3	60.0	15	55.6	31	66.0	44	59.5		NS		
	High school	1	20.0	1	3.7	1	2.1	2	2.7	12.511	0.406		
	Diploma	0	0.0	6	22.2	5	10.6	15	20.3				
Qualification	Bachelor	4	80.0	10	37.0	25	53.2	35	47.3				
	Master	0	0.0	10	37.0	15	31.9	20	27.0		IND		
	PHD	0	0.0	0	0.0	1	2.1	2	2.7				
	Employed	3	60.0	25	92.6	43	91.5	67	90.5				
Occupation	Unemployed	0	0.0	0	0.0	2	4.3	2	2.7	10.56	0.021		
Occupation	Retired	0	0.0	0	0.0	2	4.3	2	2.7	19.30	**		
	Student	2	40.0	2	7.4	0	0.0	3	4.1				
	Single	2	40.0	9	33.3	11	23.4	15	20.3				
	Married	3	60.0	18	66.7	35	74.5	59	79.7		0 560		
Marital Status	Divorced	0	0.0	0	0.0	1	2.1	0	0.0	4.808	0.309 NS		
	Widower/ widow	0	0.0	0	0.0	0	0.0	0	0.0	1.000	NS		

Table 4g shows there is significant association between occupational wellness sub parameter of HRA and age and occupation



DISCUSSION

11

Demographic data shows that 70(45.8%) came under 26-40 years of age, 93(60.8%) were female, 74(48.4%) had a bachelor's degree, 138(90.2%) were employed, and 115(75.2%) were married. A study conducted in Estonia showed of 25.4% were 65 years and older. Life expectancy is of 81 years for men and 85.2 for women. Life expectancy at birth is 72.8 years for men and 81.4 for women.

Findings related to Demographic Variables

Demographic data shows that 70(45.8%) came under 26-40 years of age, 93(60.8%) were female, 74(48.4%) had a bachelor's degree, 138(90.2%) were employed, and 115(75.2%) were married.

Findings related to description of Health Risk Assessment among adults

Total Health Risk score as 184 ±23.940 (73%) indicates overall good health and good awareness regarding health, wellness and lower health risk behavior. The emotional awareness had the highest score of 21.89 ± 3.153 which indicates good emotional awareness. A high score on this section indicates that the respondent can cope with stress. The least scores were seen for General health scores 13.56 ± 4.62 indicates moderate general health with a few health concerns, including any existing medical conditions or symptoms and Nutrition assessment 13.95 \pm 3.584, indicating moderate awareness and moderate health risk behaviour with high risk of CVD. Values, spirituality and beliefs scores were 20.56 \pm 3.656. indicates a strong sense of finding meaning and purpose in spiritual or religious practices. Physical activity 14.70 ±3.969 reveals moderately regular physical activity, likely to experience moderately improved cardiovascular health, moderate weight management, and moderate risk of chronic diseases). Safety scores 20.54 ± 3.70 were high indicating the respondent knows potential safety hazards and takes steps to reduce their risk of injury or illness. Mental wellness 20.22 ± 3.153 scores indicate good mental health and has no significant symptoms or concerns. (Symptoms of Anxiety/depression). Intellectual Awareness The score of 19.20 ±3.691indicates good intellectual awareness for lifelong learning. Occupational wellness Score of 18.83±4.402 and indicates good occupational wellness; fulfilling and meaningful job and can balance work and personal life healthily. The Social and environmental wellness score of 19.99 ±3.620 indicates respondent has a strong support network and can access resources and services when needed.

Findings related association of Total Health Risk Assessment with selected demographic variable among adults.

The present study shows no significant association between total HRA and age, gender, qualification, occupation and marital status.

Association of Health Risk Assessment sub parameters with selected demographic variable among adults.

There is significant association between general health sub parameter of HRA and gender. (13.013 p<0.011), females were greater in number could be the reason. There is significant



International Journal of Research in Medical and Basic Sciences Volume 11 Issue 05, May 2025 ISSN: 2455-2569 Impact Factor: 8.028 Journal Homepage: http://mbsresearch.com, Email: mbsresearchp@gmail.com Double-Blind Peer Reviewed Refereed Open Access International Journal

association between mental health sub parameter of HRA and age, (x226.399, p=0.002), those between 26-40 years had better mental health awareness. A significance was also seen for mental health awareness and qualification (χ 2-41. 911, p=0.000) those with Bachelors had better mental health. and for occupation. (χ 228.541, p=0.000) the employed had better mental There is significant association between occupational wellness sub health awareness. parameter of HRA and age (χ 2-19.028, p=0.025) and occupation (χ 2-19.56, p=0.021). The age between 26 -40 had better occupational awareness and those that were employed had better occupational health awareness. There is no significant association between Values, Spirituality, and Beliefs sub-parameter of Health Risk Assessment with selected demographic variable among adults. shows there is no significant association between intellectual awareness sub-parameter of Health Risk Assessment with selected demographic variable among adults. There is no significant association between safety sub parameter of HRA and age, gender, qualification, occupation and marital status. There is no significant association emotional awareness sub parameter of HRA and age, gender, qualification, occupation and marital status. There is no significant association Social and Environmental Wellness sub parameter of HRA and age, gender, qualification, occupation and marital status. CONCLUSION

The present study findings have concluded that there was overall good health and good awareness regarding health, wellness and lower health risk behavior. The sub components revealed good emotional awareness and good mental health, moderate awareness towards nutrition, strong values, spirituality and beliefs, moderately regular physical activity and moderate general health, good safety knowing the potential safety hazards and takes steps to reduce their risk of injury or illness. Good intellectual awareness for lifelong learning and good occupational wellness.

Acknowledgement

We would like to extend our heartfelt thanks to all participants who willingly took part in the Health Risk Assessment study. We also acknowledge the support and guidance provided by our instructors and the College of Nursing at Gulf Medical University, Ajman, throughout the course of this research.

Ethical Considerations

This study was conducted following the approval of the Institutional Review Board at Gulf Medical University. Prior to participation, informed consent was obtained from all individuals. Anonymity and confidentiality of the participants were strictly maintained, and participation was entirely voluntary

Conflict of Interest

12

The authors declare that there is no conflict of interest in the conduct and reporting of this research.



Contribution of Authors

All authors contributed significantly to the development of this research. This includes the formulation of objectives, literature review, data collection and analysis, and the drafting and revision of the final manuscript. The collaborative efforts of all group members were essential in the successful completion of the study.

REFERENCES

1. https://mohap.gov.ae/en

13

2. Gonzalez-Colom R, Monterde D, Papa R, Kull M, Anier A, Balducci F, Cano

I, Coca M, De Marco M, Franceschini G, Hinno S, Pompili M, Vela E, PieraJiménez J, Pérez P, Roca J; JADECARE consortium. Toward Adoption of Health Risk Assessment in Population-Based and Clinical Scenarios: Lessons From

Health Risk Assessment in Population-Based and Clinical Scenarios: Lessons From JADECARE. Int J Integr Care. 2024 Jun 4;24(2):23. doi: 10.5334/ijic.7701. PMID: 38855028; PMCID: PMC11160407.

 Stuck AE, Moser A, Morf U, Wirz U, Wyser J, Gillmann G, Born S, Zwahlen M, Iliffe S, Harari D, Swift C, Beck JC, Egger M. Effect of health risk assessment and counselling on health behaviour and survival in older people: a pragmatic randomised trial. PLoS Med. 2015 Oct 19;12(10):e1001889. doi: 10.1271/jacural.puncl.001889. DMD: 26470077. DMCID: DMC4610670

10.1371/journal.pmed.1001889. PMID: 26479077; PMCID: PMC4610679.

- 4. Dewar R, Gavin C, McCarthy C, Taylor RA, Cook C, Simons RRL. A userfriendly decision support tool to assist one-health risk assessors. One Health. 2021 May 14;13:100266. doi: 10.1016/j.onehlt.2021.100266. PMID: 34041349; PMCID: PMC8141943.
- Bizjak T, Kontić D, Kontić B. Practical Opportunities to Improve the Impact of Health Risk Assessment on Environmental and Public Health Decisions. Int J Environ Res Public Health. 2022 Apr 1;19(7):4200. doi: 10.3390/ijerph19074200. PMID: 35409883; PMCID: PMC8998966.
- 6. Dueñas-Espín I, et.al,. Proposals for enhanced health risk assessment and stratification in an integrated care scenario. BMJ Open. 2016 Apr 15;6(4):e010301. doi: 10.1136/bmjopen-2015-010301. PMID: 27084274; PMCID: PMC4838738.
- Linderholm M, Törnvall E, Yngman-Uhlin P, Hjelm K. Self-rated health, lifestyle habits and risk assessment in 75-year-old persons attending preventive clinic visits with a nurse in primary health care: a cross-sectional study. Prim Health Care Res Dev. 2019 Jul 1;20:e88. doi:

10.1017/S1463423619000136. PMID: 32799984; PMCID: PMC6609977.

 Lim SS, Et.al., A risk assessment of burden of disease and injury attributable to 67 risk factors and risk factor clusters in 21 regions, 1990-2010: a systematic analysis for the Global Burden of Disease Study 2010. Lancet. 2012 Dec 15;380(9859):2224-60. Doi 10.1016/S01406736(12)61766-8.



- Anderson EL, Omenn GS, Turnham P. Improving Health Risk Assessment as a Basis for Public Health Decisions in the 21st Century. Risk Anal. 2020 Nov;40(S1):2272-2299. doi: 10.1111/risa.13617. Epub 2020 Nov 3. PMID: 33145799.
- Herghelegiu AM, Moser A, Prada GI, Born S, Wilhelm M, Stuck AE. Effects of health risk assessment and counselling on physical activity in older people: A pragmatic randomised trial. PLoS One. 2017 Jul 20;12(7):e0181371. doi: 10.1371/journal.pone.0181371. PMID: 28727796; PMCID: PMC5519086.
- Tobis, S., Jaracz, K., Talarska, D. *et al.* Validity of the EASYCare Standard 2010 assessment instrument for self-assessment of health, independence, and well-being of older people living at home in Poland. *Eur J Ageing* 15, 101– 108 (2018). https://doi.org/10.1007/s10433-017-0422-7
- 12. Mamdouh H, Hussain HY, Ibrahim GM, Alawadi F, Hassanein M, Zarooni AA, Suwaidi HA, Hassan A, Alsheikh-Ali A, Alnakhi WK. Prevalence and associated risk factors of overweight and obesity among adult population in Dubai: a population-based cross-sectional survey in Dubai, the United Arab

Emirates. BMJ Open. 2023 Jan 24;13(1):e062053. doi: 10.1136/bmjopen2022-062053. PMID: 36693685; PMCID: PMC9884894.

13. AlKetbi LB., et.al., Disease Risk Score Derivation and Validation in Abu

Dhabi, United Arab Emirates: A Retrospective Cohort Study. Journal of the

AmericanHeartAssociationNov.202413(23)https://doi.org/10.1161/JAHA.124.035930

- 14. Al-Shamsi S. Development and validation of a novel 10-year cardiovascular risk prediction nomogram for the United Arab Emirates national population BMJ Open 2022;**12:**e064502. doi: 10.1136/bmjopen-2022-064502
- 15. Nagykaldi ZJ, Voncken-Brewster V, Aspy CB, Mold JW. Novel computerized health risk appraisal may improve longitudinal health and wellness in primary care: a pilot study. Appl Clin Inform. 2013 Feb 20;4(1):75-87. doi: 10.4338/ACI-2012-10-RA-0048. PMID: 23650489; PMCID: PMC3644816.