Original article

Screening the health status of people working in a university

Alberto Aimo[a,b], Giuseppe Vergaro[a,b], Sabina De Rosis[c], Alberto Giannoni[a,b],
Anna Luce Damone[b], Alessandro Innocenti[a], Paolo Marcheschi[b],
Lara Camerini[a], Giorgia Panichella[a], Paolo Morfino[a], Claudio Passino[a,b],
Michele Emdin[a,b] and Sabina Nuti[a,c]

Background We aimed to evaluate the physical and mental well being of people working in our academic institution.

Methods This online survey targeted professors ($n = 108$), researchers ($n = 78$), technical and administrative staff ($n = 279$) working in the Scuola Superiore Sant'Anna (Pisa, Italy). Twenty-four multiple-choice questions explored the physical and mental health status, the main cardiovascular risk factors and levels of physical activity, the risk of cancer, and eating and drinking habits.

Results Over 1 week, 112 participants out of 465 (24%) completed the survey [69% women, median age 43 years (interquartile range 33–53)]. The physical and mental health were judged as 'poor' by 5% and 13%. Many individuals had at least one cardiovascular risk factor (diabetes, 4%; hypertension, 10%; family history of coronary artery disease before 40 years, 21%; hypercholesterolemia, 24%; current or former smoking habit, 39%), and 6% had all of them. Many participants were rather sedentary: for example, 44% never or hardly ever walked at a quick pace for ≥ 20 min. As for eating and drinking habits, 36% ate sweets five or six times a week or every day, 15% drank beer and/or wine at least five or six times a week, and 5% drank spirits three or four times a week.

Conclusions A small but not negligeable proportion of responders complained of 'poor' health, and 65% had at least one cardiovascular risk factor. The global levels of physical activity and eating and drinking habits were globally suboptimal. Educational and screening activities to improve the wellbeing of people working in academia are advisable.

Introduction

Working in an academic institution, whether as a student, researcher or staff member, can be intellectually stimulating and rewarding. However, the demanding nature of these roles, coupled with factors such as long hours, high stress levels, and sedentary work environments, can have significant implications for the health and wellbeing of individuals. Many university research cultures are indeed characterized by job insecurity, competing demands in the form of both teaching and research work, long hours including unpaid and uncontracted work, competition among peers, and an intense pressure to publish papers and win research funding.[1]

A few studies have investigated the physical and mental wellbeing of people working in academic institutions. In 2010, a Brazilian study included 145 professors from the Federal University of Viçosa.[2] Professors were mainly men (71%), half of them were overweight, 17% were hypertensive, and 5% had either diabetes or abnormal glucose metabolism.[2] A 2020 Nigerian study assessed the cardiovascular risk profile of the staff of a private university ($n = 140$).[3] Almost half of the participants had obesity and dyslipidemia, whereas the prevalence of hypertension and smoking was 33% and 11%, respectively.[2] In the first study, women had lower blood pressure, body mass index, and abdominal, hip and waist circumferences,[2] while in the second one, males were more likely to smoke and be hypertensive.[3] Another study was conducted between 2017 and 2018 in a Portuguese institution to estimate the prevalence of cardiovascular risk factors among 345 professors, researchers, and technical, administrative, and management staff.[4] The most prevalent risk factor was hypercholesterolemia (43%), followed by hypertension (20%), hyperglycemia (10%), and diabetes (1%). Almost half of the participants were overweight or obese

(47%) and did not practice any kind of physical activity (58%).[4] In 2007, a study on 500 people working in the academic, administrative, and laboratory units of a Nigerian tertiary institution assessed the awareness of ischemic heart disease and its risk factors, as well as preventive strategies.[5] Smoking, excessive alcohol consumption and obesity were readily recognized as detrimental, while a sedentary lifestyle was less considered.[5] The senior staff (>55 years) were more aware of cardiovascular risk factors, but did not adopt more often preventive strategies (such as diet and physical activity).[5] Another 2021 study included women aged ≥40 years employed at the Taibah University (Saudi Arabia).[6] Using the Framingham Study Cardiovascular Disease risk assessment tool, 3% of women were classified as at high cardiovascular risk, 14% at intermediate risk, 20% at borderline risk, and 63% at low risk. The overall knowledge of cardiovascular risk factors and cardiovascular disease presentation was quite low.[6]

Awareness of the importance of mental health has become more widespread in recent decades. Two studies explored the impact of COVID-19-related restrictions on the academic community via online surveys. The first study assessed academic, administrative and service staff members working in a South African University, and the second assessed university staff and postgraduate students working in a United Kingdom (UK) institution.[7,8] They both found that about 30% of the personnel reported psychological distress and symptoms suggestive of depression. In both studies, age had an inverse correlation with psychological distress and female participants were significantly more likely to suffer from this. Interestingly, around 20% met the criteria for hazardous drinking, and 30% were drinking more than before the pandemic.[8]

We are not aware of similar screenings in Italian universities, where only periodic check-ups are conducted. This study aimed to assess the general health level of the university staff, including professors and researchers but also the technical and administrative staff, as part of a comprehensive project aimed to increase people's awareness on their health status and improve the physical and mental well being of the university staff. The survey focused on cardiovascular risk factors and the patterns of physical activity, but also on mental health, family history of cancer and adherence to the common screening programs for cancer.

Methods
Target population and survey outline
The Scuola Superiore Sant'Anna is a public university working in the field of applied sciences: Economics and Management, Law, Political Sciences, Agricultural Sciences and Plant Biotechnology, Medicine, and Industrial and Information Engineering, promoting interdisciplinary training programs of excellence, open to university students enrolled on Bachelor's Degree courses, Master's Degree courses, including single-cycle courses and PhD Courses. The school promotes the internationalization of didactics and research with innovative paths in the fields of university education, scientific research and advanced training.[9]

This survey aimed to gain insight into the health status of professors (n = 108), researchers (n = 78), and technical and administrative staff (n = 279). Before completing the survey, participants had to agree to the presentation of anonymized data in an aggregated form.

Creation of the survey
We created a short survey investigating the physical and mental health status, the main cardiovascular risk factors and levels of physical activity, the risk of cancer, and eating and drinking habits. The general outline, main topics and specific questions of the survey were defined by a multidisciplinary team including cardiologists (G.V., A. G.), a psychologist (A.L.D.), and an Occupational Medicine specialist (A.I.). These investigators were asked to compile a specific Delphi questionnaire assessing four points: the relevance of each item, the need to include the item in the questionnaire, the place of each item in the questionnaire, and the clarity of wording. These points were evaluated on a scale from 1 (complete agreement) to 5 (complete disagreement). A scale of questions about eating habits and a scale on physical activity were integrated from a previously validate questionnaire, for measuring the lifestyle-related behaviors of respondents.[10] The 25 questions and their answer options are reported in the Supplemental material, Supplemental Digital Content, http://links.lww.com/JCM/A625. Participants were also invited to calculate their 10-year risk of fatal and nonfatal cardiovascular events through the European Society of Cardiology SCORE2 system.[11] As for personal information, sex and age were asked.

System for data collection
An online survey was created via Google Workspace Forms. This survey was active from 8 to 15 May 2023. The link to the survey was sent on 8 May and again on 12 May 2023.

Statistical analysis
Statistical analysis was performed using IBM SPSS Statistics (version 22, 2013). Normal distribution was assessed through the Shapiro−Wilk test. All continuous variables were nonnormally distributed and were then expressed as median and interquartile range. Patients were classified according to their sex and by age tertiles. Categorical variables were expressed as number and

percentage. Comparisons between age and sex subgroups were performed through the chi-square test. *P*-values of <0.05 were deemed significant.

Results

Over 1 week, 112 participants out of 465 (24%) completed the online survey [35 men (31%) and 77 women (69%)]. The median age was 43 years (interquartile range 33–53; minimum 19, maximum 66 years).

Assessment of physical and mental health

The global health status was judged as 'good', 'very good' or 'excellent' by 83% of participants, but as 'fair' by 12% and 'poor' by '5%'. The physical health was rated as 'poor' by 5%, while as many as 13% judged their mental health as 'poor' (Fig. 1 and Table 1). The assessment of the physical and mental health did not differ significantly across tertiles of age. Notably, participants in the first tertile of age (<38 years) complained more often of 'poor mental health' than the other participants (26% vs. 5% of those aged 38–48 years vs. 11% of those aged ≥49 years; *P* = 0.028), while no differences were noted between men and women (*P* = 0.166).

Cardiovascular risk and physical activity

Around two-thirds of participants (65%) had at least one cardiovascular risk factor. Specifically, 4% had been diagnosed with diabetes, 10% with hypertension, 21% had at least one family member with symptomatic coronary artery disease before 40 years, 24% had high cholesterol levels, and 39% were current or former smokers. Six percent of the participants had all these risk factors (Fig. 2 and Table 2). As expected, the number of cardiovascular risk factors increased with age tertiles (*P* = 0.017). Only 45 participants calculated their 10-year risk of fatal and nonfatal cardiovascular events through the SCORE system; their median risk was 2.1% (interquartile range 1.3–2.9, minimum 0.3, maximum 12.0), and 3 participants had a risk of ≥10%.

With respect to physical activity, 8% never walked at a quick pace for ≥20 min, and as many as 36% did it less than once a week. Eighty percent never or hardly ever (i.e. less than once a week) ran, swam, or cycled for ≥20 min, none did team sports activity at least 5 or 6 days a week, and 96% never or hardly ever exercised in a gym or outdoors for ≥45 min (Fig. 3 and Table 3).

Risk of cancer

As many as 43% of the participants had a family history of neoplasia. The adherence to cancer screening programs was specifically investigated. Most women (84%) were regularly screened for cervical cancer. All women aged

Fig. 1
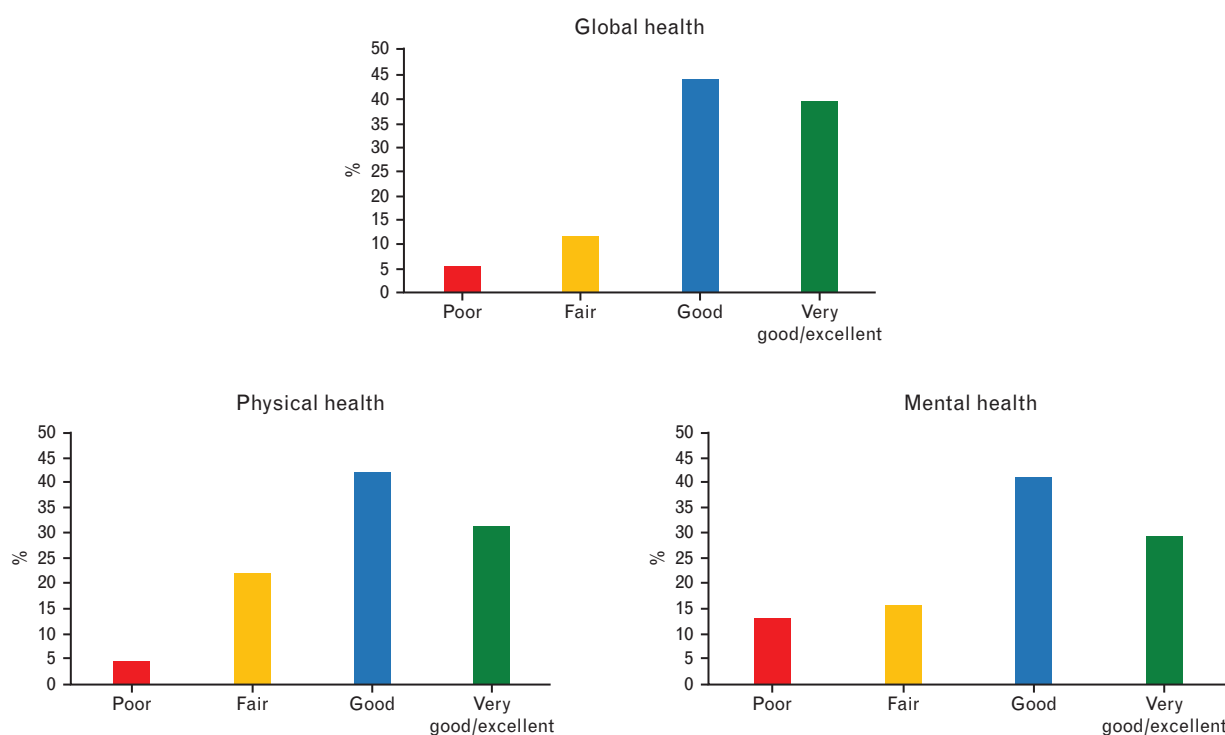
Self-assessment of health status.

Table 1 Assessment of physical and mental health

Questions	Answer options	Men $n=35$	Women $n=77$	P (men vs. women)	<38 years $n=35$	38−48 years $n=39$	≥49 years $n=38$	P (<38 vs. 38−48 vs. ≥49 years)
How would you describe your health status?	*Poor, n (%)*	1 (3)	5 (7)	0.466	1 (3)	1 (3)	4 (11)	
	Fair, n (%)	2 (6)	11 (14)		3 (9)	1 (3)	9 (24)	
	Good, n (%)	17 (49)	32 (42)		13 (37)	20 (51)	16 (42)	**0.017**
	Very good/ excellent, n (%)	15 (43)	29 (38)		18 (51)	17 (44)	9 (24)	
How would you describe your physical health?	*Poor, n (%)*	1 (3)	4 (5)	0.336	0 (0)	1 (3)	4 (11)	
	Fair, n (%)	6 (17)	19 (25)		8 (23)	7 (18)	10 (26)	
	Good, n (%)	13 (37)	34 (44)		13 (37)	17 (44)	17 (45)	0.172
	Very good/ excellent, n (%)	15 (43)	20 (26)		14 (40)	14 (36)	7 (18)	
How would you describe your mental health?	*Poor, n (%)*	7 (20)	8 (10)	0.457	9 (26)	2 (5)	4 (11)	
	Fair, n (%)	4 (11)	14 (18)		4 (11)	7 (18)	7 (18)	0.196
	Good, n (%)	13 (37)	33 (43)		12 (34)	16 (41)	18 (47)	
	Very good/ excellent, n (%)	11 (31)	22 (29)		10 (29)	14 (36)	9 (24)	

Chi-square analysis (comparison of the frequencies of the different answers between men and women or different age categories). Significant *P*-values are highlighted in bold. See text for further details.

≥50 years ($n=24$, 77% of all women) adhered to the national screening for breast cancer. Nine women aged ≥40 years and a woman aged 32 years were also screened for breast cancer. The national screening for colon cancer is proposed to men and women aged ≥50 years. Twenty-eight individuals aged ≥50 years (85% of men and 71% of women) were screened for colon cancer. Only three individuals aged <50 years (one men and two women) were also screened.

Food and drinks

As for dietary habits, only 5% ate fish at least five times a week, whereas 75% ate pasta five or six times a week or every day, and 36% ate sweets five or six times a week or every day. Fifteen percent drank beer and/or wine at least five or six times a week, and 5% drank spirits three or four times a week. Figure 4 and Table 4 recapitulate these findings.

Discussion

We conducted a simple survey on the personnel of our academic institution (Scuola Superiore Sant'Anna) to gain insight into the perception of physical and mental health, the prevalence of cardiovascular risk factors and levels of physical activity, the dietary patterns, the family history of cancer and the adherence to cancer screening programs. The first finding was that a nonnegligeable proportion of participants were not satisfied with their health status. This was particularly evident when physical and mental health

were judged separately. A quite surprising result is that as many as 13% deemed their mental status to be 'poor', and this percentage rose to 26% among individuals in the first tertile of age (i.e. <38 years of age). Furthermore, physical activity, eating, smoking and drinking habits resulted as being quite unsatisfactory on the whole, despite the average high education level and the socio-economic status characterizing the population surveyed. This was particularly worrisome as many participants had one or more cardiovascular risk factors, and as many as 7% of those estimating their 10-year risk of cardiovascular events had a risk of ≥10%, which is generally considered very high and warrants treatment for cardiovascular risk factors.[12]

The adherence to routine screening programs for breast, cervical and colon cancer endorsed by the national health system was instead quite good, which is positive also given that many individuals had a family history of cancer.

Overall, these results stress the importance of assessing the health status of people working in universities, including the administrative personnel, focusing also on aspects usually overlooked by periodic health checks. Based on the experience of business companies, investing in social, physical, developmental, psychological, and emotional wellbeing can make people 'happier, safer, more valued or more productive at work',[13] which can have ultimately a positive impact on the scientific output and academic rankings. Moreover, a poor health status often determines

Fig. 2

Prevalence of the main cardiovascular risk factors.

Table 2 Cardiovascular risk factors

Risk factors	Men n=35	Women n=77	P (men vs. women)	<38 years n=35	38−48 years n=39	≥49 years n=38	P (<38 vs. 38−48 vs. 49 years)
Diabetes, n (%)	1 (3)	3 (4)	0.784	1 (3)	1 (3)	2 (5)	0.786
Hypertension, n (%)	3 (9)	8 (10)	0.764	0 (0)	4 (10)	7 (18)	**0.030**
Family history of CAD, n (%)	5 (14)	19 (25)	0.214	5 (14)	10 (26)	9 (24)	0.452
Hypercholesterolemia, n (%)	12 (34)	15 (20)	0.090	3 (9)	9 (23)	15 (40)	**0.008**
Current/former smoker, n (%)	4 /12 (11/34)	8/20 (10/26)	0.621	4/7 (11/20)	7/11 (18/28)	1/14 (3/37)	0.152
1/2/3 CV risk factors, n (%)	15/8/2 (43/23/6)	28/15/5 (36/20/7)	0.803	14/3/0 (40/9/0)	12/12/2 (31/31/5)	17/8/5 (45/21/13)	**0.017**

Chi-square analysis (comparison of the frequencies of the different answers between men and women or different age categories). Significant P-values are highlighted in bold. See text for further details. CAD, coronary artery disease; CV, cardiovascular.

a scarce cardiorespiratory fitness and high levels of negative emotions, which are both predictors of long-term survival in participants who are well educated and working in executive or professional positions.[14] A mental status characterized by sadness, stress and pessimism is indeed associated with dysregulation of immune system activity, thus increasing the risk of cancer and cardiovascular disease. The pathophysiological rationale includes the alteration of the hypothalamic−adreno−cortical axis causing enhanced levels of cortisol, which poses a risk for insulin resistance, overweight, high blood pressure, reduced tumors suppression and impaired cognitive function.[15,16]

These results also call for initiatives aiming to improve the health status and individual wellbeing of people working in academic institutions. Regularly administering surveys and feedback to the employees about their wellbeing and work environment may in fact lead to design initiatives specifically tailored to their needs. These may include fitness classes, mindfulness workshops, stress management seminars, and nutrition counseling. Moreover, the employees should be encouraged to take regular breaks throughout the day. Flexible work options such as remote work, flexible hours, or compressed workweeks may also be offered. The academic institution should also provide access to mental health resources, including counseling

Fig. 3
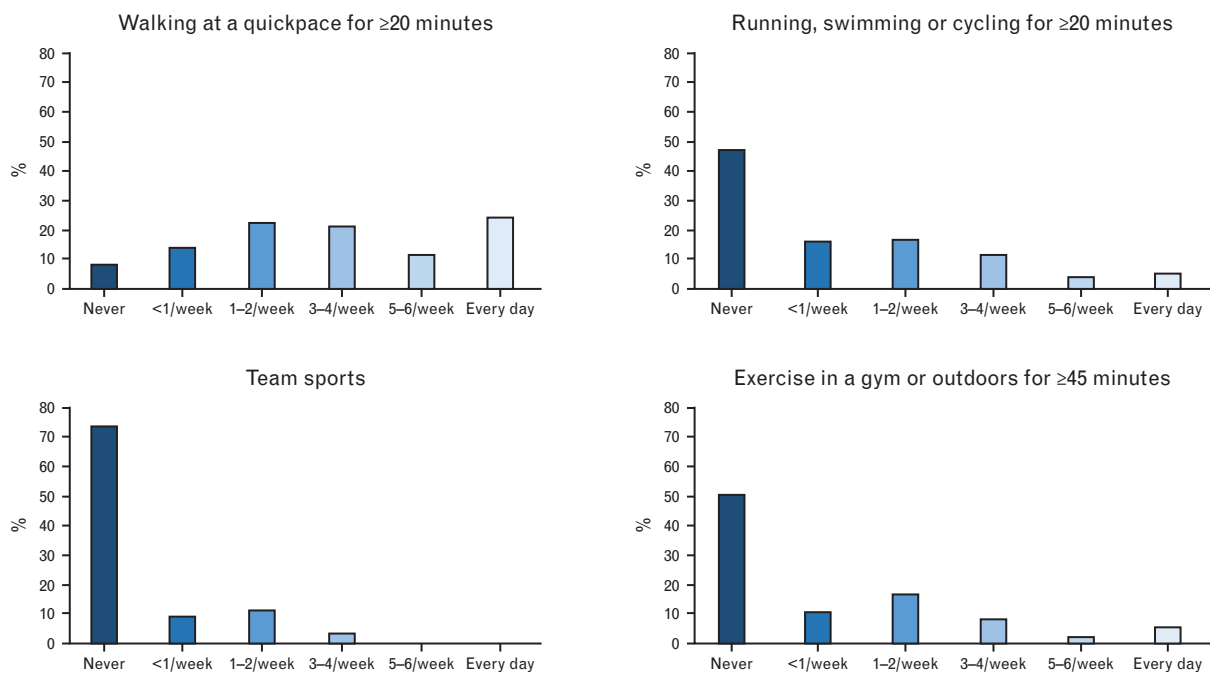
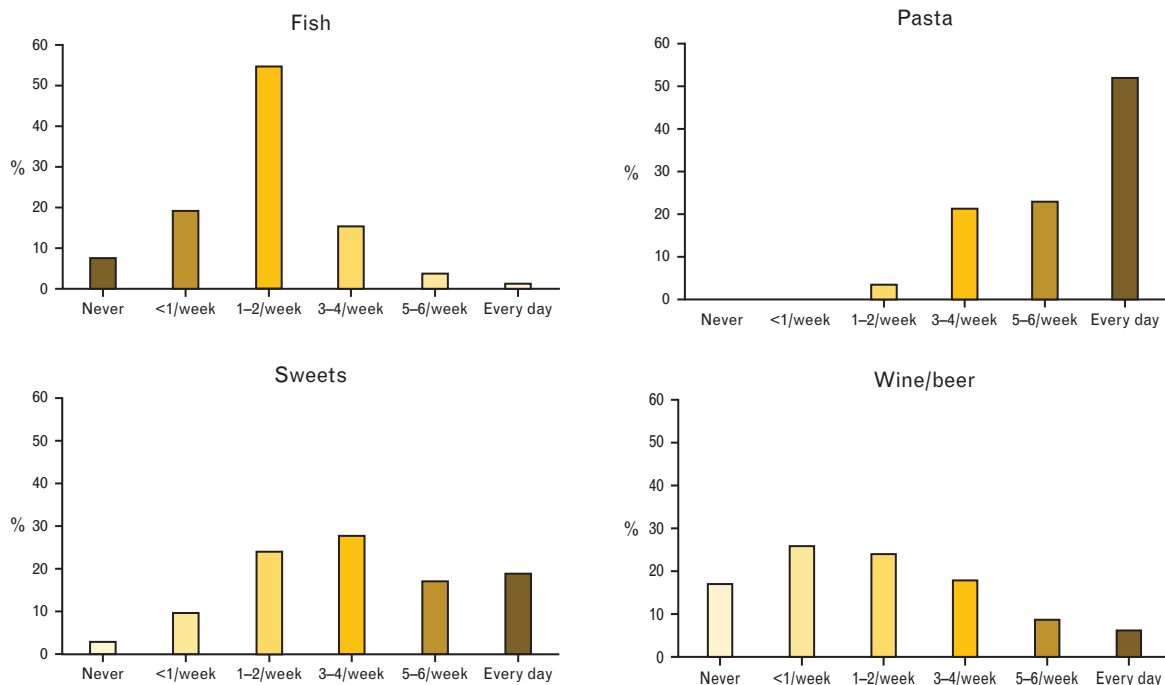Percentages of participants doing physical activity.

Table 3 Physical activity

Questions	Answer options	Men $n=35$	Women $n=77$	P (men vs. women)	<38 years $n=35$	38−48 years $n=39$	≥49 years $n=38$	P (<38 vs. 38−48 vs. ≥49 years)
How often do you walk at a quick pace for ≥20 min?	*Never*	3 (9)	6 (8)	0.861	1 (3)	3 (8)	5 (13)	**0.704**
	<1/week	4 (11)	11 (14)		2 (6)	7 (18)	6 (16)	
	1−2/week	6 (17)	19 (25)		9 (26)	7 (18)	9 (24)	
	3−4/week	7 (20)	16 (21)		9 (26)	9 (23)	5 (13)	
	5−6/week	4 (11)	9 (12)		5 (14)	4 (10)	4 (11)	
	Every day	11 (31)	16 (21)		9 (26)	9 (23)	9 (24)	
How often do you go running, swimming or cycling for ≥20 min?	*Never*	12 (34)	41 (53)	0.351	17 (49)	15 (39)	21 (55)	**0.435**
	<1/week	8 (23)	10 (13)		5 (14)	7 (18)	6 (16)	
	1−2/week	7 (20)	12 (16)		7 (20)	5 (13)	7 (18)	
	3−4/week	4 (11)	9 (12)		4 (11)	7 (18)	2 (5)	
	5−6/week	1 (3)	3 (4)		2 (6)	1 (3)	1 (3)	
	Every day	3 (9)	2 (3)		0 (0)	4 (10)	1 (3)	
How often do you do sports activity?	*Never*	24 (69)	60 (78)	0.608	23 (66)	30 (77)	31 (82)	**0.551**
	<1/week	4 (11)	7 (9)		3 (9)	5 (13)	3 (8)	
	1−2/week	6 (17)	7 (9)		7 (20)	3 (8)	3 (8)	
	3−4/week	1 (3)	3 (4)		2 (6)	1 (3)	1 (3)	
	5−6/week	0 (0)	0 (0)		0 (0)	0 (0)	0 (0)	
	Every day	0 (0)	0 (0)		0 (0)	0 (0)	0 (0)	
How often do you exercise in a gym or outdoors for ≥45 min?	*Never*	18 (51)	40 (52)	0.146	18 (51)	22 (56)	18 (47)	**0.174**
	<1/week	5 (14)	8 (10)		5 (14)	5 (13)	3 (8)	
	1−2/week	4 (11)	16 (21)		10 (29)	5 (13)	5 (13)	
	3−4/week	3 (9)	8 (10)		1 (3)	5 (13)	5 (13)	
	5−6/week	0 (0)	3 (4)		1 (3)	0 (0)	2 (5)	
	Every day	5 (14)	2 (3)		0 (0)	2 (5)	5 (13)	

Chi-square analysis (comparison of the frequencies of the different answers between men and women or different age categories). Significant *P*-values are highlighted in bold. See text for further details.

Fig. 4

Eating and drinking habits.

Table 4   Food and drinks

Questions	Answer options	Men n = 35	Women n = 77	P (men vs. women)	<38 years n = 35	38-48 years n = 39	≥49 years n = 38	P (<38 vs. 38−48 vs. ≥49 years)
How often do you eat fish?	Never	3 (9)	5 (7)	0.292	3 (9)	2 (5)	3 (8)	0.559
	<1/week	6 (17)	15 (20)		9 (26)	5 (13)	7 (18)	
	1−2/week	22 (63)	39 (51)		17 (49)	25 (64)	19 (50)	
	3−4/week	2 (6)	15 (20)		5 (14)	7 (18)	5 (13)	
	5−6/week	1 (3)	3 (4)		1 (3)	0 (0)	3 (8)	
	Every day	1 (3)	0 (0)		0 (0)	0 (0)	1 (3)	
How often do you eat red meat?	Never	3 (9)	13 (17)	0.594	7 (20)	3 (8)	6 (16)	0.591
	<1/week	12 (34)	28 (36)		11 (31)	13 (33)	16 (42)	
	1−2/week	17 (49)	29 (38)		13 (37)	20 (51)	13 (34)	
	3−4/week	3 (9)	7 (9)		4 (11)	3 (8)	3 (8)	
	5−6/week	0 (0)	0 (0)		0 (0)	0 (0)	0 (0)	
	Every day	0 (0)	0 (0)		0 (0)	0 (0)	0 (0)	
How often do you eat cheese?	Never	3 (9)	3 (4)	0.290	3 (9)	1 (3)	2 (5)	0.099
	<1/week	3 (9)	18 (23)		9 (26)	4 (10)	8 (21)	
	1−2/week	9 (26)	26 (34)		7 (20)	11 (28)	17 (45)	
	3−4/week	15 (43)	23 (30)		14 (40)	17 (44)	7 (18)	
	5−6/week	4 (11)	6 (8)		1 (3)	6 (15)	3 (8)	
	Every day	1 (3)	1 (1)		1 (3)	0 (0)	1 (3)	
How often do you eat fruits?	Never	0 (0)	0 (0)	**<0.001**	0 (0)	0 (0)	0 (0)	0.142
	<1/week	0 (0)	2 (3)		0 (0)	0 (0)	2 (5)	
	1−2/week	4 (11)	2 (3)		3 (9)	2 (5)	1 (3)	
	3−4/week	0 (0)	14 (18)		2 (6)	7 (18)	5 (13)	
	5−6/week	13 (37)	8 (10)		8 (26)	3 (8)	10 (26)	
	Every day	18 (51)	51 (66)		22 (63)	27 (69)	20 (53)	
How often do you eat vegetables?	Never	0 (0)	3 (4)	0.431	1 (3)	2 (5)	0 (0)	0.662
	<1/week	4 (11)	12 (16)		7 (20)	4 (10)	5 (13)	
	1−2/week	14 (40)	32 (42)		15 (43)	14 (36)	17 (45)	
	3−4/week	14 (40)	21 (27)		9 (26)	14 (31)	14 (37)	
	5−6/week	1 (3)	7 (9)		2 (6)	5 (13)	1 (3)	
	Every day	2 (6)	2 (3)		1 (3)	2 (5)	1 (3)	
How often do you eat sweets?	Never	1 (3)	2 (3)	0.305	0 (0)	1 (3)	2 (5)	0.665
	<1/week	3 (9)	8 (10)		2 (6)	4 (10)	5 (13)	
	1−2/week	5 (14)	22 (29)		11 (31)	9 (23)	7 (18)	
	3−4/week	13 (37)	18 (26)		11 (31)	11 (28)	9 (24)	
	5−6/week	4 (11)	15 (20)		3 (9)	7 (18)	9 (24)	
	Every day	9 (26)	12 (16)		8 (23)	7 (18)	6 (16)	
How often do you drink wine or beer?	Never	4 (11)	15 (20)	0.622	6 (17)	3 (8)	10 (26)	0.411
	<1/week	9 (26)	20 (26)		6 (17)	13 (33)	10 (26)	
	1−2/week	8 (23)	19 (25)		10 (29)	10 (26)	7 (18)	
	3−4/week	6 (17)	14 (18)		9 (26)	6 (15)	5 (13)	
	5−6/week	4 (11)	6 (8)		3 (9)	3 (8)	4 (11)	
	Every day	4 (11)	3 (4)		1 (3)	4 (10)	2 (5)	
How often do you drink spirits?	Never	15 (43)	47 (61)	0.198	16 (46)	20 (51)	26 (68)	0.253
	<1/week	13 (37)	17 (25)		10 (29)	13 (33)	9 (24)	
	1−2/week	4 (11)	9 (12)		7 (20)	5 (13)	1 (3)	
	3−4/week	3 (9)	2 (3)		2 (6)	1 (3)	2 (5)	
	5−6/week	0 (0)	0 (0)		0 (0)	0 (0)	0 (0)	
	Every day	0 (0)	0 (0)		0 (0)	0 (0)	0 (0)	

Chi-square analysis. Significant P-values are highlighted in bold. See text for further details.

services, support groups, and employee assistance programs. Last but not least, creating an inclusive environment that values diversity could result in improving the employees' overall wellbeing.

Limitations

Several limitations of this pilot initiative must be acknowledged. We investigated the personnel of a small university institution listed among the seven Schools of Advanced Studies in Italy, and results of the survey do not necessarily reflect the reality of other university institutions in Italy, including the much larger University of Pisa. The adherence to the screening was modest despite the rather limited number of questions. No information was collected on the professional role (professor, researcher or technical and administrative staff). People not participating in the screening did not give their consent to the use of their data for research purposes, so we cannot compare the characteristics of those who were surveyed vs. those who were not. Additionally, no information was collected on the clinical history besides cardiovascular risk factors and the family history of cancer. Finally, participants were not asked about possible initiatives endorsed by the Scuola to improve their wellbeing.

Conclusions

A small but not negligible proportion of responders complained of 'poor' health, and 65% had at least one cardiovascular risk factor. The levels of physical activity and eating and drinking habits were globally suboptimal. These findings support the notion that there is a need for educational initiatives and tailored screening activities to improve the wellbeing of people working in academic institutions.

Conflicts of interest

There are no conflicts of interest.

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