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Employment characteristics of individuals who received osteopathic care: a retrospective cross-sectional observational study

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A B S T R A C T

Objective: The profile and clinical presentation of people consulting osteopaths in Belgium has been studied and reported before. Information on employment aspects of such individuals is lacking. The aim was to contribute to filling this gap.
Methods: The study had a retrospective cross-sectional observational design. The study population included employed Dutch-speaking members, aged 18–65, of a large Health Insurance Fund in Belgium who had visited an osteopath at least once in the period January 1, 2019 and December 31, 2019. Data collection occurred through a digital self-reported instrument to be filled out once. Participation in the study was entirely voluntary. Descriptive, between-group and a multivariate logistic regression analyses were performed.
Results: The study population included 955 individuals with 70 % being female. Thirty-one per cent reported work absence (mean: 37.5 ± 62.5 days) in a 12 months' time period due to the complaint for which they consulted an osteopath. The main reason for work absence included non-specific low back pain (21.9 %). Respondents indicating the osteopath as the first care professional they consulted had significantly fewer work absence days compared to those who first consulted another health care professional (27.9 ± 52.2 vs. 41.5 ± 66.1 days, $p < .01$).
Conclusion: This is the first study examining employment-related characteristics of individuals seeking osteopathic care. The findings must be cautiously interpreted, but they give a first impression of what the effect of osteopathic care on employment may be. This impact needs to be further examined applying study designs that allow conclusions about the causal or non-causal relationship between osteopathic care and employment outcomes.

Implications

- first study on employment-related characteristics of Flemings seeking osteopathic care
- The study gives a first impression of what the effect of osteopathic care on employment may be
- This impact needs to be further examined applying study designs that allow to draw conclusions about the causal or non-causal relationship between osteopathic care and employment outcomes.

1. Introduction

Manual therapy or manual medicine including osteopathy is a form of health care for a variety of indications such as musculoskeletal, digestive, circulatory, respiratory, or stress-related complaints. Osteopathy was founded at the end of the 19th century in the United States and introduced in Europe at the beginning of the 20th century [1]. Osteopathy is a primary contact and person-centred healthcare discipline that supports a whole-person approach to all aspects of health and healthy development, principally by the practice of manual (hands-on) treatment [2].

Figures from the most recent Belgian Health Interview showed that, in 2018, 8.4 % of the general population consulted an osteopathic practitioner [3]. The total number of such visits has been estimated at 3 million per year [1]. In Belgium, osteopathic practitioners are most frequently consulted by individuals with musculoskeletal complaints, such as non-specific neck or low back pain, cervical and lumbar radiculopathy, and headache or migraine [4]. This is congruent with the findings in other European countries [5,6]. Musculoskeletal disorders represent a significant health burden as indicated by the Global Burden of Disease study 2019. Between 1990 and 2019, the number of incident cases, deaths, and disability-adjusted life years (DALYs) attributed to such disorders increased by 59.9 %, 116.0 %, and 77.4 %, respectively. Notably, the burden of musculoskeletal disorders was substantially higher in females compared to males, with 1.29 times more incident cases, 2.24 times more deaths, and 1.45 times more DALYs observed in

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females [7]. Musculoskeletal disorders significantly impose substantial costs on employers, including absenteeism, reduced productivity, and increased expenses for healthcare, disability benefits, and workers' compensation [8]. A study on the health and economic burden of musculoskeletal disorders in Belgium found that these were found to be responsible for a substantial economic cost in terms of both medical and absenteeism costs [9].

A study on the size and dimension of osteopathy in Belgium further revealed that the main reason for an osteopathic consultation was 'very often' for acute (46.7 %), followed by chronic (31.3 %) complaints [4]. The presence of a chronic illness has been shown to be a strong risk factor for sickness absence from work [10] and has also been shown to be a cause of presenteeism i.e. a state of decreased productivity while working [11,12]. This is alarming as having a job is important for an employee's well-being [13], depression and general mental health [14].

Data on employment is crucial because it provides valuable insights into the economic, social, and health-related aspects of society. There is already a body of published research highlighting the importance and relevance of data related to work. For example, to examine the impact of the health-care sector on national economies in a number of European countries [15], the relationship among employment, earnings and poverty [16], the importance of the breadth of human capital for career success [17]. Labor market data can also play a critical role in informing policymakers and supporting the development of effective policy measures. Such data enables evidence-based decisions in areas such as workforce development programs, job training initiatives, and unemployment insurance. By analyzing current and projected labor market trends, policymakers can more effectively allocate resources and design targeted interventions to address workforce challenges [18,19].

Evidence on employment characteristics (e.g. employment status and percentage, work absence and reduction of the employment percentage) of people seeking osteopathic care is relatively scarce. A systematic review including information from 14 cross-sectional surveys on osteopaths' and patients' profiles identified only three studies reporting merely the patient's employment status, but without addressing the impact of their complaint, for which they consulted an osteopath, on their work (absence from work, reduced employment status, etc.) [5]. Although the need for cost-effectiveness studies and related knowledge on employment characteristics is great within osteopathic care [20] and by extension for all manual therapy professions [21], it is still scarce. Along with this paucity is the insufficient quality of these studies to inform policy and practice [22].

For Belgium, practitioner-based information on profiles and clinical presentations of people consulting an osteopathic practitioner is available [3,4] but information on employment characteristics is lacking. By focusing specifically on individuals who consulted an osteopath, this study provides insight into the work-related profiles of a patient population often affected by musculoskeletal disorders. Understanding these employment characteristics can help identify occupational risk factors and guide targeted interventions in workplace settings.

The aim of the current study is to contribute to filling this gap by examining employment-related characteristics of people who received osteopathic care in the Flemish region (Belgium) and to explore potential associations between work-related outcomes and clinical or occupational factors, in order to better understand the possible role of osteopathic care in the management of issues that may impact work participation. Given the high prevalence of work-related musculoskeletal complaints, such data are essential for informing healthcare providers and policymakers about the occupational context in which osteopathic care is sought.

2. Methods

2.1. Study design and study population

The 'STrengthening the Reporting of OBservational studies in Epidemiology (STROBE)' checklist for cross-sectional studies was followed [23]. The study design consisted of a cross-sectional observational study. The study population included members of the Socialist Health Insurance Fund. This sickness fund is the second largest one (about 3.3 million members) of seven health insurance funds in Belgium [24]. In Belgium, health insurance is mandatory and residents can freely choose the health insurance fund they want to join. This membership allows people to access subsidised services, such as physician care, hospital care, dental care, pharmaceuticals and so forth. In addition, health insurance funds are free to offer supplemental insurance on top of the care that is covered by the mandatory health insurance. One of those supplemental services provided by the Socialist Health Insurance Fund is partial reimbursement of the costs of a consultation with an osteopath (with a minimum of five and a maximum of ten visits per year).

To be eligible for inclusion in this study, members needed to be employed individuals aged between 18 and 65. The upper limit was chosen based on the fact that 65 years is considered retirement age in Belgium. The dataset was based on billing data from mandatory health insurance on the one hand and billing data from mandatory supplementary health insurance on the other. Eligible individuals needed to have had at least one visit to an osteopath in the reference period 01/01/2019-31/12/2019, whether in a series of visits or not. This visit did not need to be the first one ever. Only considering treatment naïve individuals would have limited the number of candidate-participants, probably resulting in a problem of small numbers for certain analyses. Similar to previous research [25,26], no restrictions were applied related to the type of complaint(s) for which people consulted an osteopath. Candidate-participants had to live in the Flemish part of Belgium and understand Dutch.

2.2. Data sources and data collection

Identification of candidate-participants occurred through the Socialist Health Insurance Fund 'Supplemental Insurance' database. Because of privacy reasons, this occurred by a member of the Socialist Health Insurance Fund study department. Data collection occurred by means of a digital self-reported questionnaire including closed-ended questions to be filled out once by the participants. This survey tool included questions related to sociodemographics, osteopathic care, and employment characteristics. Questions related to 'osteopathic care' were developed in collaboration with two osteopaths involved in the project and supported by the questionnaire from the OPERA Belgium survey [4]. For the questions related to 'employment', the iMTA Productivity Cost Questionnaire was used as inspiration [27]. The questionnaire is only available in Dutch, but an overview of the topics covered in the questionnaire is provided in English as supplementary material. The time window referred to a 12 month period prior to the completion of the questionnaire (approximately covering 2019 as questionnaires were filled out in the period January–February 2020). Information on sociodemographics included sex, age, marital status, education, and income type. These variables were included in the analysis as potential confounding factors to control for their influence on the association between the main complaint and whether the osteopathic practitioner was the first care provider consulted. Information on osteopathic care included information on the type of complaint(s), number of osteopathic consultations, osteopathic practitioner whether or not the first provider to treat the complaint(s), and referral aspects. Information on employment characteristics included employment status (employee, self-employed, public servant, percentage full-time/part-time employment), information on work absence and reduction of the employment percentage due to the complaint(s) for which an osteopathic practitioner was consulted.

2.3. Recruitment, practicalities and ethics

The members who were extracted from the 'Supplemental Insurance'

database were sent an invitation by email to participate in the study. Invitations were only sent by email based on the experience of the study department of the insurance fund from previous studies that digital access was considered no issue. The invitation email included information on the study aim and practical information (e.g. how to enter the digital survey, questionnaire only to be filled out once, anonymity aspects). It was also emphasized that only staff from the Socialist Health Insurance Fund study department would handle the individual data and that the researchers at Ghent University would only receive the data in an aggregated form. Informed consent including information on the study objectives, practicalities, anonymity and reporting was implemented. In January 2020, an invitation to participate in the study was sent to a randomly selected group of 1497 eligible members. The number of people who received the invitation was relatively limited assuming a 50 % response rate, similar to a previous survey conducted by the Socialist Health Insurance Fund among individuals who underwent bariatric surgery. Yet, by early February 2020, only 260 members (17 %) had responded. Subsequently, to minimize the risk of sampling bias, it was decided to initiate a second invitation round, inviting an additional 6915 members resulting in 8412 members being invited. A total of 1197 individuals returned the online survey, resulting in a response rate of 14 %. Nine hundred and fifty-five reported being employed and these are included in the analyses for the current study (see Fig. 1).

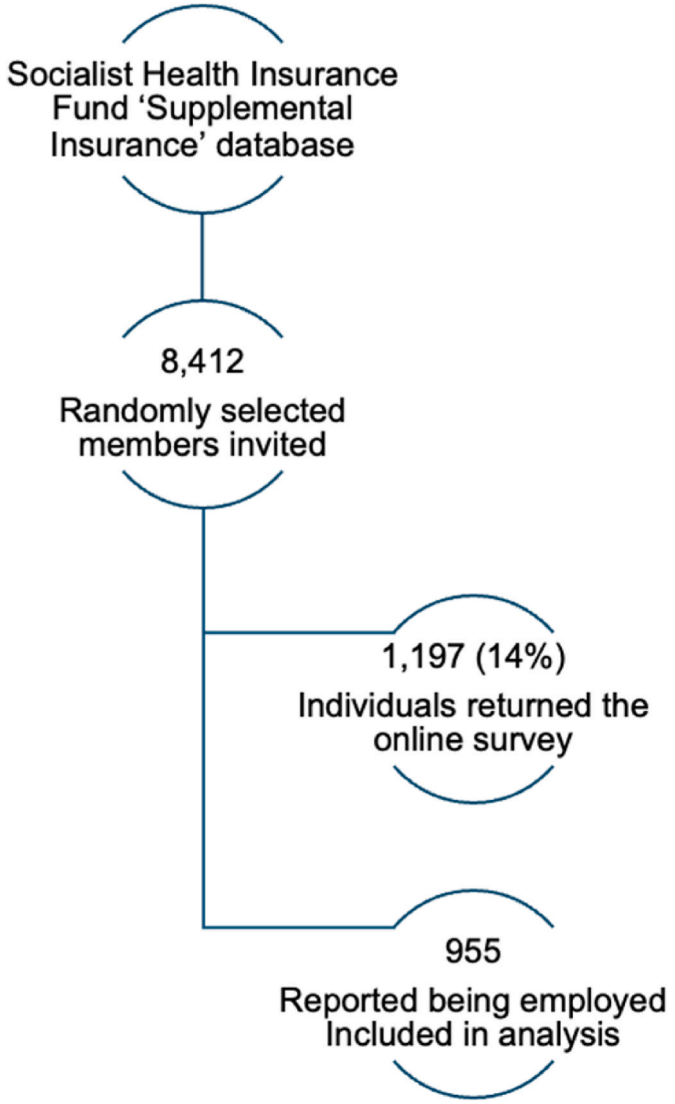


Fig. 1. Flowchart of the recruitment process.

2.4. Statistical analysis

First, descriptive statistics were performed expressing the data as percentages (qualitative variables) and mean ± standard deviation (quantitative variables). Missing data were not replaced and thus not considered in the analyses. Second, between-group differences were examined using the X^2-test for qualitative variables and the independent samples T-test for quantitative variables. The following between-group analyses were performed to respond to the following questions: (1) are there significant differences in sociodemographic and osteopathic care characteristics between participants who reported being absent from work due to the complaint for which they consulted an osteopathic practitioner in a one year time period prior to the completion of the questionnaire and those who reported no absence from work, and (2) are there significant differences in sociodemographic and osteopathic care characteristics in those who reported work absence according to whether or not the osteopath was the first care provider. A multivariate logistic regression analysis was performed to evaluate associations between whether or not the osteopathic practitioner was the first care provider consulted by the patient and sex, age category, marital status, education, and the main complaint. A P-value $\leq$0.05 was considered statistically significant. All analyses were performed using SAS software (version 9.4).

2.5. Ethics

Ethical approval was not required as inviting participants, data collection and statistical analyses was performed by the study department of Solidaris, the Socialistic Sickness Fund (Belgium). The research was conducted within the framework of the statutory tasks of the mutual health insurance organization. The study was approved by the Institutional Review Board of SOLIDARIS. The dataset was only analyzed by the data analyst of the health insurance fund. The other researchers had no access to the dataset in any way. The research team at Ghent University had no access to individual data of the participants, but only received the output of the statistical analyses (performed by Solidaris) they requested. The dataset will be deleted one month after publication.

3. Results

A total of 1197 individuals returned the online survey, resulting in a response rate of 14 %. In all, 955 reported being employed and these are included in the analyses for the current study. The study population consisted of 70.4 % females. Mean ± SD age was 43.0 ± 10.1. About half of the respondents reported being married and 56.0 % had a college or university degree (Table 1). The most frequent reported main complaint for which the respondents consulted an osteopathic practitioner was non-specific low back pain (24.8 %), followed by non-specific neck pain (17.3 %) and 'other complaints (not further specified)' (15.3 %) (Table 1).

The majority of participants (74.8 %) worked as an employee, followed by civil servant (16.7 %). A difference was made between 'employee' and 'civil servant' as, in Belgium, there are three employment statuses: employee, civil servant, or self-employed. Each having its own legal framework (Table 2). A total of 70 % of the participants reported that they worked full-time (information not included in Table 2). About 31 % (n = 298) reported that they have been absent from work in a 12 months' time period due to the complaint for which they consulted an osteopathic practitioner (Table 2). The mean number of work absence days amounted to 37.5 days (SD: 62.5 days, 95 %CI: 30.3–44.6). The main reason for work absence included non-specific low back pain (21.9 %), followed by 'other' (15.8 %) (Table 2).

In Table 3 the results of a between-group analysis are listed examining whether or not significant differences were observed between

Table 1
Sociodemographics and osteopathic care characteristics of the study population (n = 955).

Variable	Study population (n = 955)
sex, *n (%)*	
male	283 (29.6)
female	672 (70.4)
age (years), *mean±SD*	43.0 ± 10.1
age category (years), *n (%)*	
18-39	378 (39.6)
40-59	536 (56.1)
60-64	41 (4.3)
marital status, *n (%)*	
single	163 (17.1)
married	493 (51.6)
cohabiting	187 (19.6)
divorced	107 (11.2)
widowed	5 (0.5)
education, *n (%)*	
primary school	27 (2.8)
secondary school	393 (41.2)
college	402 (42.1)
university	133 (13.9)
main complaint, *n (%)*	
non-specific low back pain	237 (24.8)
non-specific neck pain	165 (17.3)
joint-muscle limb pain	112 (11.7)
ischialgia	81 (8.5)
headache	70 (7.3)
pregnancy complaints/post birth	51 (5.3)
cervico-brachialgia	44 (4.6)
gastrointestinal problems	31 (3.2)
jaw joint problems	7 (0.7)
other	146 (15.3)
do not know	11 (1.2)
number of osteopathic consultations, *mean±SD*	4.16 ± 3.05

Table 2
Employment characteristics of the study population.

Variable	Study population (n = 955)
employment status, *n (%)*	
employee	714 (74.8)
self-employed	64 (6.7)
civil servant	160 (16.7)
other	17 (1.8)
absence from work in the past 12m due to the complaint for which an osteopathic practitioner was consulted, *n (%)*	
yes	298 (31.2)
No	657 (68.8)
number of reported work absence days due to the complaint for which an osteopathic practitioner was consulted, *mean±SD*[a]	37.5 ± 62.5
type of complaint as reason for work absence, *n (%)*[b]	
non-specific low back pain	64 (21.9)
non-specific neck pain	38 (13.0)
joint-muscle pain limb	38 (13.0)
ischialgia	32 (11.0)
headache	32 (11.0)
gastrointestinal problems	15 (5.1)
cervico-brachialgia	14 (4.8)
pregnancy complaints/post birth	13 (4.5)
other	46 (15.8)

[a] Figures relate to the 298 respondents who reported absence from work due to the complaint for which they consulted an osteopathic practitioner in the year preceding the completion of the questionnaire.
[b] n = 292 (missing: n = 6).

participants who reported that they had been absent from work due to the complaint for which they consulted an osteopathic practitioner and those who did not report work absence. Statistically significant between-group differences were observed for the variables 'education' with a higher proportion of respondents who reported work absence having a college or university degree compared to those who reported no work absence (59.0 % vs. 49.3 %; $p < .01$). This was also the case for 'main complaint' with those who reported work absence, a lower proportion suffered from low back pain or neck pain compared to those who reported no work absence (34.3 % vs. 45.6 %; $p < .05$). Statistically significant between-group differences were also observed for 'number of osteopathic consults' with those who reported work absence having a higher number of consults compared to the respondents who did not report work absence (4.7 ± 3.5 vs. 3.9 ± 2.8; $p < .01$). Among those who consulted the osteopath as a first practitioner, the proportion of women was significantly higher than among those who did not ($p < .01$). Participants who reported consulting an osteopath as the first care professional had a significantly lower number of work absence days associated with the complaint for which they consulted an osteopath compared to those who initially sought care from another professional (27.9 ± 52.2 days versus 41.5 ± 66.1 days, $p < .01$; Table 4). Of all participants in the study, 6 % reported they had switched to working less time (reduction of employment percentage) in the past 12 months because of the complaint for which they consulted an osteopath in 2019 (information not included in table). A total of 31.3 % of the respondents reported that they were referred to the osteopath by another health care provider. The most reported referrer was the general practitioner (60 %), followed by the physiotherapist (18 %) and medical specialist (12 %). About 67 % indicated not being referred by another health care provider, while 1.4 % of the respondents did not know (information not included in table).

In the multivariate logistic regression analysis focusing on whether or not the osteopathic practitioner was the first care provider as dependent variable, 'sex' was found to be the only significant sociodemographic factor (OR: 0.695, 95 %CI: 0.527–0.917). In addition, two other significant factors were identified being the variables 'ischialgia as

Table 3
Sociodemographics and osteopathic care variables according to whether or not reported absence from work in a one-year time period due to the complaint for which an osteopath was consulted (n = 955).

Variable	Work absence (n = 298)	No work absence (n = 657)	P-value
sex, *n (%)*			0.42
male	83 (27.9)	200 (30.4)	
female	215 (72.1)	457 (69.6)	
age (years), *mean±SD*	42.9 ± 9.7	43.1 ± 10.2	0.87
age category (years), *n (%)*			0.11
18-39	116 (38.9)	262 (39.9)	
40-59	175 (52.7)	361 (54.9)	
60-64	7 (2.4)	34 (5.2)	
marital status, *n (%)*			
single	51 (17.1)	112 (17.0)	0.74
married	148 (49.7)	345 (52.5)	
cohabiting	59 (19.8)	128 (19.5)	
divorced	39 (13.1)	68 (10.4)	
widowed	1 (0.3)	4 (0.6)	
education, *n (%)*			<0.01
primary school	13 (2.0)	14 (4.7)	
secondary school	256 (39.0)	137 (46.0)	
college	284 (43.2)	118 (39.6)	
university	104 (15.8)	29 (9.7)	
main complaint, *n (%)*			<0.05
non-specific low back pain	64 (21.5)	173 (26.3)	
non-specific neck pain	38 (12.8)	127 (19.3)	
joint-muscle limb pain	38 (12.8)	74 (11.3)	
ischialgia	32 (10.7)	49 (7.5)	
headache	32 (10.7)	38 (5.8)	
pregnancy complaints/ post birth	13 (4.4)	38 (5.8)	
cervico-brachialgia	14 (4.7)	30 (4.6)	
gastrointestinal problems	15 (5.0)	16 (2.4)	
jaw joint problems	3 (1.0)	4 (0.6)	
other	46 (15.4)	100 (15.2)	
do not know	3 (1.0)	8 (1.2)	
n° of osteopathic visits, *mean±SD*	4.7 ± 3.5	3.9 ± 2.8	<0.01

Table 4
Sociodemographics and osteopathic care variables of respondents that reported being absent from work (n = 293) according to whether or not consulted an osteopath as first care provider in the reference year 2019.

variable	Osteopath first provider (n = 91)	Osteopath not first provider (n = 202)	P-value
sex, *n (%)*			<0.01
male	38 (41.8)	42 (20.8)	
female	53 (58.2)	160 (79.2)	
age (years), *mean±SD*	44.6 ± 9.6	42.1 ± 9.8	<0.01
age category (years), *n (%)*			<0.05
18-39	27 (29.7)	87 (43.1)	
40-59	60 (65.9)	112 (55.4)	
60-64	4 (4.4)	3 (1.5)	
marital status, *n (%)*			
single	11 (12.1)	40 (19.8)	0.24
married	53 (58.2)	93 (46.0)	
cohabiting	18 (19.8)	39 (19.3)	
divorced	9 (9.9)	29 (14.4)	
widowed	0 (0.0)	1 (0.5)	
education, *n (%)*			<0.01
primary school	9 (9.9)	4 (2.0)	
secondary school	46 (50.5)	88 (43.6)	
college	27 (29.7)	91 (45.0)	
university	9 (9.9)	19 (9.4)	
absence days from work, *mean±SD*	27.9 ± 52.2	41.5 ± 66.1	<0.01

most important complaint' with such people had smaller odds for consulting the osteopath as first care provider for this complaint (OR: 0.722, 95 %CI: 0.523–0.997) and people who indicated no specific body part as most important complaint also had smaller odds for consulting the osteopath as first care provider for this complaint (OR: 0.425, 95 % CI: 0.182–0.991).

4. Discussion

The objective of the current study was to examine employment-related characteristics of individuals receiving osteopathic care for various complaints in the Flemish region of Belgium. Non-specific low back pain and non-specific neck pain were the two most common main complaints for which respondents consulted an osteopathic practitioner in a one-year time period. This confirms the results from a previous cross-sectional practitioner-based survey with 332 respondents in Belgium, reporting that non-specific low back pain and neck pain were the main reasons for seeking osteopathic care [4]. In the current study, 70 % of participants were female. This is more or less congruent with the findings of a systematic review of surveys focusing on the practice of osteopaths. In all countries (n = 9) included in the review, the results indicated that women were more likely to consult an osteopathic practitioner with percentages varying from 57 % in Switzerland to 62 % in Canada [5]. These results need to be interpreted with caution as they were based on practitioner-based information. In Belgium, data from the 2018 National Health Survey showed a marked difference in the percentage of women (7.2 %) compared to the percentage of men (4.8 %) who consulted an osteopath in Flanders (N = 4294) [3].

The scientific evidence on employment-related characteristics of people who sought osteopathic care and the possible impact of osteopathic care on employment is very limited. Previous studies that examined profiles of such individuals often provided limited information regarding employment aspects by only reporting employment status (e.g. employee, self-employee) [28,29]. To the best of our knowledge, information on the possible impact of osteopathic care on employment was only reported in one study. In that study, the role of osteopathy in the Swiss primary health care system was examined. The authors noted that, based on figures from 1144 patients, 84 % had no days off from work or school due to the condition for which they sought osteopathic care [30]. In our study, 69 % of the respondents reported no work absence in the past 12 months due to the complaint for which they consulted an osteopathic practitioner. The findings of the two studies are yet difficult to compare. In the Swiss study, data collection occurred by means of a retrospective clinical audit of patient data drawn from osteopaths patient records to review practice and clinical record keeping [30], while in the current study, a self-reported questionnaire was used. In addition, in the Swiss study, 18 % of the patient records referred to children under the age of 18, while in our study only individuals aged 18 and older were eligible for inclusion.

The mean number of work absence days reported by the respondents in our study was 38 days. Interestingly, individuals who initially sought care from an osteopath for their complaint had significantly lower work absence days compared to those who first consulted another health care professional. Additionally, among those who reported work absence, a lower proportion suffered from low back pain or neck pain compared to those who reported no work absence. This may be attributed to the effect of osteopathic care for people with such complaints. Indeed, the results from a systematic literature review suggested that osteopathic care may be effective for spinal complaints. It is however important to interpret those findings with caution because the studies included in the review had notable variations in sample sizes, number of treatments, control groups, and follow-up periods [31,32]. Similar results were found in a relatively recent systematic review and meta-analysis on the effectiveness of osteopathic interventions in chronic non-specific low back pain. The findings suggested pain level and functional status improvements, but further high-quality randomized controlled trials are needed to produce better quality evidence [33]. Despite this, it is possible that, in our study, individuals with spinal complaints who sought care from an osteopath as their first provider experienced successful treatment, resulting in a positive impact on their work attendance. This may also be reflected in the significantly lower number of visits to an osteopathic practitioner in a one-year time period in the respondents who reported no work absence compared to those who did report absenteeism. These are yet hypotheses as the cross-sectional design of the current study did not allow us to draw conclusions about the effectiveness of osteopathic treatment and the likely impact on employment. The potential impact of osteopathic care and employment outcomes need to be further examined applying study designs that allow to draw conclusions about the causal or non-causal relationships.

Having a job with suitable working conditions helps protect physical health and prevent psychiatric disorders. In contrast, unemployment and retirement typically have a more negative impact on mental health compared to being employed, while excessive work hours can adversely affect health [13,34]. Non-specific low back pain was the main reason for work absence in the 12 months preceding the completion of the questionnaire. From an occupational perspective, low back pain is indeed a considerable issue. For example, the results of a meta-analysis including 17 studies with follow-up periods of six months or longer suggested a pooled estimate of 15.5 % (95 % CI: 9.8 %–23.6 %) of work absence due to back pain [35]. Currently, prognostic factors and models for predicting work absence in adults with musculoskeletal conditions seeking care from healthcare practitioners remain unclear, as highlighted by a systematic review. The evidence supporting individual prognostic factors was generally weak. However, there was some indication that older age and positive recovery expectations may reduce the risk of future work absence, while a history of prior absence might increase it. Similarly, the evidence supporting prognostic models for predicting future sickness absence was also limited [36]. In the current study, six per cent of the respondents indicated that they reduced their employment percentage because of the complaint for which they consulted an osteopath in 2019. Work absence and presenteeism have a detrimental impact and are important predictors of future poor health, physical complaints, low mental well-being and low work ability as was shown in a prospective cohort study in Sweden [37]. It is possible that the change in work time could contribute to the smaller number of days off work reported by participants who indicated that the osteopath was

the first provider they consulted for their complaint. This can yet not be confirmed from the data whether this reduction in employment percentage contributed to the smaller number of days off work. However, it is plausible that working fewer hours could reduce the physical or mental stress associated with their original complaint, potentially leading to fewer absences. Further investigation would be required to establish a causal relationship or understand the mechanisms behind this observation.

A number of limitations need to be addressed. First, the study had a cross-sectional design, so we could only assess the association between receiving osteopathic care and the effect on a number of employment outcomes and not the causal relationship. Second, we had no information on comorbidities, severity of the complaint or whether the complaint was acute or chronic in nature which may have impacted the findings. Third, the information related to osteopathic care and employment-related characteristics may be subject to a certain degree of uncertainty because data collection was self-reported. It is known that self-reported data tends to be an underestimation of the reality as known from studies in other domains such as alcohol consumption [38] or tobacco use [39]. A fourth limitation relates to the nature of the dataset in a fact that we did not collect information on the nature of the employment. For example, office workers often spend extended hours seated at a computer, maintaining a sitting posture for most of their workday. Occupational groups subjected to poor sitting postures for more than half the day face a significantly higher risk of developing LBP [40]. A recent systematic review and meta-analysis highlighted various factors contributing to occupational musculoskeletal disorders across sectors such as healthcare, agriculture, industry, and computing. These disorders stem from a range of causes, either individually or in combination, including physical factors like vibration, force, awkward postures, and repetitive movements, as well as environmental factors such as poorly lit workspaces, extended working hours, and psychosocial influences [8]. Future research should incorporate the collection of detailed occupational characteristics to better understand the nature of the job and its potential impact on health outcomes. Gathering information about factors such as the physical demands, work posture, repetitive movements, and the duration of sedentary or physically intensive tasks is essential. To achieve this, validated questionnaires such as the occupational sitting and physical activity questionnaire (OSPAQ) [41] or the Job Content Questionnaire (JCQ) [42] can be employed, as they provide reliable and standardized methods to assess various aspects of occupational activities. Fifth, as this was a cross-sectional exploratory study, no formal sample size calculation was conducted, since the aim was not to achieve statistical representativeness but to collect sufficient data to explore potential associations. This approach may limit the generalizability and statistical power of the findings. There is a possibility that the generalizability of the results to the Belgian population could be questioned, as the participants were recruited from only one health insurance fund in Belgium, and only those members who understand Dutch were eligible to participate. On the other hand, the Socialist Health Insurance Fund is the second largest in Belgium, with a market share of 27 %, which may mitigate concerns about representativeness to some extent. Despite the study's limitations, we believe it offers a valuable first insight into the employment-related characteristics of individuals receiving osteopathic care in Flanders, and highlights potential associations between clinical and occupational factors relevant to work participation.

5. Conclusion

To the best of our knowledge, this is the first study examining employment-related characteristics of individuals seeking osteopathic care for a series of complaints. The majority of participants were employed either as employees or as civil servants. The majority reported working full-time, and nearly one in three participants indicated having been absent from work in the past 12 months due to the complaint for which they consulted an osteopath. Among those reporting work absence, the average number of days lost was 37.5, with non-specific low back pain being the most commonly cited reason.The results suggested that individuals who initially sought care from an osteopath for their complaint had significantly lower work absence days compared to those first consulting another health care professional. Additionally, among those who reported work absence, a lower proportion suffered from low back pain or neck pain compared to those who reported no work absence. These results offer preliminary evidence of a potential association between osteopathic care and work participation. While the cross-sectional design of the study limits causal interpretation, the findings provide a valuable starting point for further research. Future studies using longitudinal or interventional designs are needed to better understand the role of osteopathic care in maintaining or restoring work ability.

CRediT authorship contribution statement

N. Verhaeghe: Writing – review & editing, Writing – original draft, Visualization, Validation, Software, Resources, Methodology, Investigation, Formal analysis, Data curation, Conceptualization. **P.L.S. van Dun:** Writing – review & editing, Validation, Methodology, Conceptualization. **L. Annemans:** Writing – review & editing, Validation, Supervision, Project administration, Methodology, Funding acquisition, Conceptualization.

Ethical approval

The study was conducted in accordance with the Declaration of Helsinki, and approved by the Institutional Review Board of SOLIDARIS. Ethical approval was not required by the research team as inviting participants, data collection and statistical analyses was performed by the study department of Solidaris, the Socialistic Sickness Fund (Belgium). The research team had no access to individual data of the participants, but only received the output of the statistical analyses performed by Solidaris.

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Declaration of competing interest

The authors declare no conflicts of interest.

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Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.ijosm.2025.100772.

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