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RESEARCH ARTICLE

# Job satisfaction and perception of workloads among dietitians and nutritionists registered in South Africa

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**Background:** Personal perspective concerning work demands directly impacts quality health care and patient satisfaction. Little is known about job satisfaction amongst dietitians and nutritionist, while workload has not previously been studied in this population.
**Methods:** A descriptive cross-sectional study was performed using an online questionnaire. Data were collected on sociodemography. Job satisfaction was measured with Spector's Job Satisfaction Survey (JSS) (including an added subscore for resource availability) and workload with the National Aeronautics and Space Administration Task Load Index (NASA-TLX).
**Results:** Respondents ($n = 238$) had a median age of 32.0 years (IQR: 27−39 years); 92.4% were female; 95.7% were dietitians, 2.4% were nutritionists and 18.9% had a postgraduate degree. Respondents had practised the profession for a median of 8 years (IQR 3−15 years), and 225 were in dietetic and nutrition-related jobs. Median scores indicated that they were slightly satisfied with their jobs ($n = 224$) and experienced slightly high workload ($n = 224$). Most respondents were moderately satisfied with the nature of their work and found it rewarding. The median scores for salaries, promotion opportunities, work environment and availability of resources were low. Total JSS was higher in older and more experienced dietitians and nutritionists than in younger ones ($p < 0.05$). Those employed in the government sector ($n = 100$) experienced higher physical demands and levels of frustration, and had lower JJS than those employed elsewhere ($n = 124$), particularly regarding promotion opportunities and resources availability.
**Conclusion:** Despite being generally positive towards practising their profession, South African dietitians and nutritionists, particularly in the public health sector, experienced only slight job satisfaction, related to salary and promotion issues and lack of resources, and were slightly overworked. Understanding the factors that shape perceptions of work within nutrition and dietetics may assist managers in recruiting and retaining a highly skilled workforce, particularly in developing countries with overburdened healthcare systems.

**Keywords** dietitians, nutritionists, employment sector, job satisfaction, job satisfaction survey (JSS), workload, NASA-TLX

## Introduction

Job satisfaction and workload represent subjective constructs of how individuals perceive their work, which has a major impact on the quality of work performance and turnover among staff.[1–3] There is a growing recognition that personal perspective concerning work demands directly impacts quality care and patient satisfaction within healthcare.[1,4] Understanding which factors shape perceptions of work within the discipline of nutrition and dietetics may assist managers in recruiting and retaining a highly skilled workforce and guide resource allocation policies toward a more balanced workload, particularly in developing countries with overburdened healthcare systems.

Job satisfaction, in simple terms, represents the extent to which people 'like or dislike their jobs',[5] whereas workload represents 'the amount of performance required to carry out work activities in a specified time'.[6,7] Thus, job satisfaction and workload are not inherent properties but rather emerge from the interaction between an individual's skills, behaviours, perceptions, the job requirements and the circumstances under which the job is performed.[5,7] Various tools that simultaneously represent these complex phenomena have been validated and used extensively for assessing job satisfaction and workload in a wide variety of settings, including health care.[5,7]

Generally, a higher level of education, professional expertise and experience, competitive remuneration, rewards and benefits, a pleasant and supportive physical and social work environment, opportunities for promotion and upward mobility, achievement of personal goals, professional development, professional status, and autonomy and meaning are associated with higher levels of job satisfaction.[2,8–12] Besides these factors, job satisfaction in healthcare settings has been linked to professional involvement,[10] respect and recognition from the public and peers,[2,9] work task diversity,[9,13] patient numbers and staffing,[14] and resource adequacy.[3] Higher job satisfaction has also been shown among healthcare professionals based in urban vs. rural-based work settings[8,9,14] and working in the private vs. the public sector.[8] Workload has been associated with many of these factors in healthcare settings, including work environment, patient loads, clarity of roles and responsibilities, and time available to perform tasks.[1] Few studies have focused on job satisfaction and associated factors among dietitians and nutritionists,[2,8] while workload in healthcare professions has mostly been studied among nurses and

doctors and some allied health professions, but not among dietitians.[4,15–17]

In South Africa, 83% of the population relies on overburdened public health services.[18,19] Numerous reports, including by the South African Human Rights Council, have warned about the dire consequences of severe human resource shortages and lack of physical resources in the South African public health sector.[18,19] Research to explore the job satisfaction and workload of healthcare professionals, including dietitians, should be prioritised. To date, only two studies have investigated job satisfaction among dietitians in South Africa. A study published in 2012, with data collection in 2008,[8] found that a representative sample of South African dietitians experienced only slight job satisfaction, which was lower than their American counterparts, mainly due to poor salaries, lack of promotion opportunities, lack of opportunities to develop an area of expertise, and a perception of low professional image.[8] Data from this 2008 study regarding intention to leave the profession predicted that, within the following five years, staff retention would be poor in dietetic posts that are based in the public, educational and food service management sectors, while posts based in the private and industrial and research sectors would be marginally more stable.[8] More recently, a small ($n$ = 66) mixed-method study in KwaZulu-Natal province showed that poor job satisfaction among dietitians in the public sector might account for attrition to the private sector.[20]

Considering the paucity of data for South Africa, this study aimed to investigate the job satisfaction and workload of dietitians and nutritionists (currently, a separate cadre of healthcare professionals focusing on public health and community nutrition) registered with the Health Professions Council of South Africa (HPCSA) and compare these between employment sectors.

## Methods

The study was approved by the Health Sciences Research and Ethics Committee of the University of the Free State (UFS-HSD2019/0374/2807).

### *Study population and sampling*

A descriptive, analytical, cross-sectional study was conducted. The study population included all dietitians and nutritionists registered with the HPCSA (registration numbers were requesteded for verification). Community service dietitians and dietetic students were excluded from the study.

Because the South African Protection of Personal Information (POPI) Act of 2013 prevents the HPCSA and societies from sharing practitioners' personal information, including postal and email addresses, with third parties, dietitians and nutritionists were invited to participate in the research via notifications in the newsletters of the Association for Dietetics in South Africa (ADSA) and Nestle Nutrition Institute Africa (NNIA). Invitations were also posted on the Facebook pages of ADSA and *Dietetics is a Profession* (*DIP*) and sent to the South African universities that train dietitians and/or nutritionists for dissemination to their alumni. Notifications included a brief explanation of the purpose of the study and a link to a self-administered online survey. Weekly reminders were posted.

### *Data collection*

Data were collected during April 2019 via an online survey designed and managed with Evasys® Version 8 (Evasys® GmbH, Lüneburg, Germany, 2021). The first screen of the online questionnaire explained the purpose and content of the survey, how data would be handled and the respondents' freedom of choice to participate or withdraw at any point during the study. Informed consent was given by clicking on 'yes', which gave the viewer access to the survey.

The questionnaire collected sociodemographic data that, according to the literature, might be associated with job satisfaction and workload.

This study used the Job Satisfaction Survey (JSS), specifically developed and validated for human service settings (including community mental health centres, state psychiatric hospitals, state social service departments and nursing homes).[5] The JSS has been widely used to assess job satisfaction in health care[21–24] and specifically in South Africa and Africa.[3,25,26] It assesses satisfaction in nine subscales, each constituting four questions (thus, 36 questions in total, some scored by a reversed negative method). Together, these nine subscales, namely salary, promotion opportunities, opportunities to develop knowledge and skills, relationship and communication with other dietitians/nutritionists colleagues, being included/accepted by other healthcare professionals as a member of the multidisciplinary team (MDT), communication with the MDT, the work environment, finding the work rewarding, and the nature of the work, contribute towards total JSS score.[5,8] For this study, an additional subscale, namely access to resources to perform the job, was added.[3] This 10th subscale constituted two questions: 'I always have enough resources to complete my job' and 'At my job, I feel that there is a lack of stationery, office space, anthropometry equipment, supplements and feeds and/or equipment to administer feeds' (inversely scored). The final measure in this study thus consisted of 38 questions using a 6-point Likert scale, which gave a possible total JSS score of 228.

Perception of workload was assessed with the National Aeronautics and Space Administration Task Load Index (NASA-TLX),[7] a standardised multidimensional subjective rating scale that measures the relative contribution of underlying psychological factors to total workload. The NASA-TLX is the most widely accepted subjective measure of human workload because of its high validity, acceptance by users and small between-respondent variability.[1,16,27] It has been validated and used in research on adults in many settings,[27] including among health professionals.[15–17] The NASA-TLX comprises six subscales, each graded on a 10-point Likert scale, measuring the mental demands, physical demands and temporal demands of the job-related tasks, achievement of and satisfaction with own performance, the amount of effort required to perform the job-related tasks, and the amount of frustration experienced, which together give a possible workload score of 60.[1,27]

### *Data analysis*

The JJS and workload scores were calculated according to published instructions[1,5,27] and expressed as percentages. The JJS scores were interpreted according to six categories, namely very low satisfaction (0–17.0%), moderately low satisfaction (17.1–33.0%), slightly low satisfaction (33.1–50.0%), slightly satisfied (50.1–66.0%), moderately satisfied (66.1–83.0%) and very satisfied (83.1–100%).[5,8] The workload scores were interpreted according to six categories, namely very low (0–17.0%), moderately low (17.1–33.0%), slightly low (33.1–50.0%), slightly high (50.1–66.0%), moderately high (66.1–83.0%) and very high (83.1–100%) workload.[1,27]

**Table 1:** Sociodemographic data of eligible respondents ($n = 238$).

| Variables | Categories | Frequency | Percentage |
|---|---|---|---|
| Registered as a ? ($n = 238$) | Dietitian | 232 | 97.5 |
| | Nutritionist | 6 | 2.5 |
| Gender ($n = 237$) | Male | 18 | 8.0 |
| | Female | 219 | 92.0 |
| Home language ($n = 236$) | Afrikaans | 100 | 42.4 |
| | English | 80 | 33.9 |
| | isiXhosa | 7 | 3.0 |
| | isiZulu | 5 | 2.1 |
| | Sesotho | 6 | 2.5 |
| | Sesotho saleboa | 15 | 6.4 |
| | Setwana | 3 | 1.3 |
| | Siswati | 2 | 0.9 |
| | Tsivenda | 3 | 1.3 |
| | Xitsonga | 13 | 5.5 |
| | Other | 2 | 0.9 |
| Relationship status ($n = 238$) | Single | 72 | 30.3 |
| | Living together | 28 | 11.8 |
| | Married | 127 | 53.4 |
| | Divorced | 8 | 3.4 |
| | Widowed | 3 | 1.3 |
| Number of children ($n = 237$) | None | 130 | 54.9 |
| | One | 33 | 13.9 |
| | Two | 57 | 24.1 |
| | Three | 11 | 4.6 |
| | Four | 5 | 2.1 |
| | Five | 1 | 0.4 |
| Institution where degree was obtained ($n = 238$) | North West University | 30 | 12.6 |
| | Sefako Makgatho University | 16 | 6.7 |
| | Stellenbosch University | 32 | 13.5 |
| | University of KwaZulu-Natal | 27 | 11.3 |
| | University of Limpopo | 21 | 8.8 |
| | University of Pretoria | 21 | 8.8 |
| | University of the Free State | 58 | 24.4 |
| | University of Western Cape | 13 | 5.5 |
| | University of Venda | 3 | 1.3 |
| | Other (not specified) | 17 | 7.1 |
| Highest qualification ($n = 236$) | Professional bachelor's degree | 153 | 64.8 |
| | Postgraduate diploma | 33 | 14.0 |
| | Master's degree | 40 | 17.0 |
| | PhD/Doctoral degree | 10 | 4.3 |
| Areas of expertise of dietitians ($n = 232$) (more than one could apply) | Cardiovascular diseases | 95 | 40.9 |
| | Diabetes Mellitus | 135 | 58.2 |
| | Eating disorders | 32 | 13.8 |
| | Food allergies/ intolerances | 44 | 19.0 |
| | Foodservice management | 48 | 20.7 |
| | Geriatrics | 27 | 11.6 |
| | Gastrointestinal disorders | 96 | 41.4 |
| | Critical care | 80 | 34.5 |
| | Mental health | 21 | 9.1 |
| | Oncology | 52 | 22.4 |
| | Paediatrics | 105 | 45.3 |
| | Pulmonary diseases | 30 | 12.9 |
| | Renal diseases | 56 | 24.1 |
| | Sports nutrition | 35 | 15.1 |

(*Continued*)

**Table 1:** Continued.

| Variables | Categories | Frequency | Percentage |
|---|---|---|---|
| Areas of expertise of dietitians and nutritionists ($n = 238$) (more than one could apply) | Public health nutrition | 95 | 39.9 |
| | Primary healthcare | 72 | 30.3 |
| | Other (not specified) | 44 | 18.5 |
| Area of dietetics of current employment (more than one could apply) ($n = 225$) | Public food service management | 6 | 2.3 |
| | Private food service management | 8 | 3.6 |
| | Public hospital (district) | 31 | 13.8 |
| | Public hospital (tertiary) | 35 | 15.6 |
| | Public hospital (regional) | 15 | 6.7 |
| | Public specialised hospital | 4 | 1.8 |
| | Private general hospital | 30 | 13.3 |
| | Private specialised hospital | 12 | 5.3 |
| | Private clinic | 6 | 2.7 |
| | Private practice | 77 | 34.2 |
| | Private consultancy | 14 | 6.2 |
| | Primary health care (public sector) | 29 | 12.9 |
| | Primary health care (private sector) | 3 | 1.3 |
| | Higher education | 29 | 12.9 |
| | Research | 16 | 7.1 |
| | Corporate health | 18 | 8.0 |
| | Pharmaceutical company | 6 | 2.7 |
| | Food industry | 12 | 5.3 |
| | Other private (not specified) | 17 | 7.6 |
| Currently working in nutrition and dietetics ($n = 238$) | Yes | 225 | 94.5 |
| | No | 13 | 5.5 |

The sample was also stratified and compared according to the employment sector, namely those primarily employed in the South African public health sector (specifically referring to government hospitals, clinics and food service) and those primarily involved in any nutrition and dietetic-related private setting, higher education and research settings.

### *Statistical analysis*

The data were captured in Microsoft Excel (2013; Microsoft Corp, Redmond, WA, USA) and analysed with the assistance of the Department of Biostatistics of the Faculty of Health Science of the University of the Free State, using SAS® version 9.4, copyright© 2014 (SAS Institute, Cary, NC, USA). The data were described as frequencies and percentages for categorical data and medians and percentiles for continuous data (as the data were not normally distributed). Associations between variables were assessed with contingency tables, applying the Kruskal–Wallis test for numerical data and Fisher's exact or chi-square for categorical data, as applicable. A $p$-value of $< 0.05$ was considered statistically significant.

## Results

A total of 259 completed surveys were submitted (a response rate of 7.1%). Of these respondents, 238 met the inclusion criteria; 232 (97.5%) were registered as dietitians, and 6 (2.5%) were registered as nutritionists. The 2019 HPSCA registry for dietitians and nutritionists comprised 3 413 (93.7%) dietitians and 229 (6.3) nutritionists. As few ($n = 6$) nutritionists responded, the results for dietitians and nutritionists were pooled for the purposes of this study.

### *Sociodemographic data*

The median age of the eligible respondents was 32 years (range 22–65 years; IQR 27–39 years). Respondents' categorical sociodemographic characteristics are summarised in Table 1. Most of the respondents were female (92.4%), and noted Afrikaans (42.0%) and English (34.3%) as home languages, the majority (66.2%) were married or cohabitating and 29.8% were single. The largest percentage of the respondents obtained their primary professional degree from the University of the Free State (25.8%), the University of Stellenbosch (13.4%) and the North West University (12.5%). Overall, 18.9% of the respondents had a Master's or PhD/Doctoral degree.

Respondents had practised as a dietitian or nutritionist for a median of eight years (range 1–43 years; IQ: 4–15 years). Dietitians indicated 2–16 areas of expertise, of which diabetes mellitus was the most prevalent (58.2%), followed by paediatric nutrition (45.3%), cardiovascular disease (40.9%) and gastrointestinal disorders (41.4%). Overall, 39.9% of dietitians and nutritionists worked in public health nutrition. Among respondents, 38.4% worked in government hospitals, 18.6% in private hospitals and 33% were involved in private practice.

In all, 225 respondents indicated working in nutrition and dietetics at the time of data collection (Table 2). Almost three-quarters (74.5%) of them were employed in urban or suburban areas, and most (72.8%) indicated that they had a contract for their current position. Overall, 47.5% of respondents indicated that they earned R300 000 to R500 000 annually (before taxes), while 11.2% earned less than R100 000 per year (at the time of data collection in April 2019, 1USD = ±R14.50). When asked why they remained in their current jobs, most (56%) responded that they stayed because 'I love what I do'. A third (32.0%) indicated a nice work environment, and 23.6% said the job was close to their homes. Conversely, 34.2% indicated that they stayed because it was the only job available, and

**Table 2:** Work-related demographics of respondents employed in the field of nutrition and dietetics ($n = 225$)

| Variables | Categories | Frequency | Percentage |
|---|---|---|---|
| Primarily work setting ($n = 225$) | Government/public health | 101 | 44.9 |
| | Private/tertiary education/research | 124 | 55.1 |
| Primarily work area ($n = 225$) | Rural/semi-rural | 56 | 24.9 |
| | Urban/suburban | 169 | 75.1 |
| Employment contract for current position ($n = 224$) | Yes | 162 | 72.3 |
| | No | 32 | 14.3 |
| | Not applicable | 30 | 13.4 |
| Current annual salary before taxes ($n = 223$) | < R100 000 | 26 | 11.7 |
| | R100 000–R149 999 | 10 | 4.5 |
| | R150 000–R199 999 | 12 | 5.4 |
| | R200 000–R249 999 | 17 | 7.6 |
| | R250 000–R299 999 | 16 | 7.2 |
| | R300 000–R349 999 | 57 | 26.6 |
| | R350 000–R399 999 | 19 | 8.5 |
| | R400 000–R500 000 | 29 | 13.0 |
| | > R500 000 | 37 | 16.6 |
| Reasons for staying in current job/ (more than one could apply) ($n = 225$) | Good salary | 51 | 22.7 |
| | Good perks | 51 | 22.7 |
| | Nice work environment | 73 | 32.4 |
| | Good career opportunities | 43 | 19.1 |
| | Close to home | 53 | 23.6 |
| | I love what I do | 126 | 56.0 |
| | It is the only job available to me | 76 | 33.8 |
| | Because I have no other choice | 44 | 19.6 |

19.6% indicated that they stayed because they had no other choice. Only 22.7% stayed because of good remuneration or perks, and 18.7% for good career opportunities.

### *Job satisfaction scores*

A total of 224 respondents completed all the questions of the JSS to allow scoring. As summarised in Figure 1, the median JJS of 61.0% indicated that, overall, respondents were only slightly satisfied with their jobs in general. Respondents were the most satisfied with the nature of their work (79.2%), followed by recognition as part of the MDT (70.8%), communication with the MDT (70.8%), and access to opportunities for knowledge and skills development (70.8%), with the median JJS of these themes all falling into the 'moderately satisfied' category. The respondents' median scores indicated that they were only slightly satisfied with finding the work rewarding (66.7%), relationships and communication with other dietitians/nutritionist colleagues in the work setting (66.7%), resource accessibility (58.3%) and their work environments (54.2%). The lowest median scores were recorded for salaries (43.6%).

### *Associations of job satisfaction scores (JSS) with sociodemographic data*

The total JJS was significantly associated with older age ($p = 0.006$), longer work experience in the field ($p = 0.002$), having a higher level of education ($p = 0.02$) and earning a higher salary ($p < 0.0001$). Older age was significantly associated with being satisfied with the nature of the work ($p = 0.0008$) and finding the work rewarding ($p < 0.0001$). There was also a non-significant trend for older respondents to feel more recognised by the MDT than younger respondents ($p = 0.09$). No other significant associations of sociodemographic data with JSS were found.

### *Job satisfaction scores (JSS) stratified according to employment settings*

When the sample was stratified according to employment sectors, the total JSS (Figure 2) was significantly ($p < 0.0001$) higher among dietitians working in private, higher education and research settings (65.4%, classified as moderately satisfied) than those working in government hospitals, clinics and food service (57.9%, classified as slightly satisfied).

Those working in private, higher education and research settings were significantly more satisfied with salaries ($p = 0.005$), promotion opportunities ($p < 0.0001$), knowledge and skills development opportunities ($p = 0.002$), the nature of their work ($p = 0.01$), finding their work rewarding ($p < 0.0001$) and their work environments ($p < 0.0001$) than those working in government hospitals, clinics and food service. Similarly, those in private, higher education and research settings felt significantly more recognised as part of the MDT ($p = 0.0003$), but there was no difference in communication with the MDT between the private and public settings. On the other hand, those in private, higher education and research settings were significantly less satisfied with relationships and communication with other dietitians/nutritionist colleagues in their work settings than those in government hospitals, clinics and food service ($p = 0.0006$). The most striking difference was in resource accessibility, where those working in private, higher education and research settings were significantly more satisfied with access to resources to perform their work (75% vs. 33.3%; $p < 0.0001$).

Among those primarily employed in government hospitals, clinics and food service, 57.1% indicated a lack of office space (vs. 24% in private, higher education and research settings), 54.3% a lack of stationery (vs. 7.0%), 56.2% a lack of anthropometric equipment (vs. 11.6%), 60% a lack of nutritional supplements and feeds (vs. 11.6%) and 50.5% a lack of equipment for the delivery of feeds (vs. 4.5%) (Table 3).

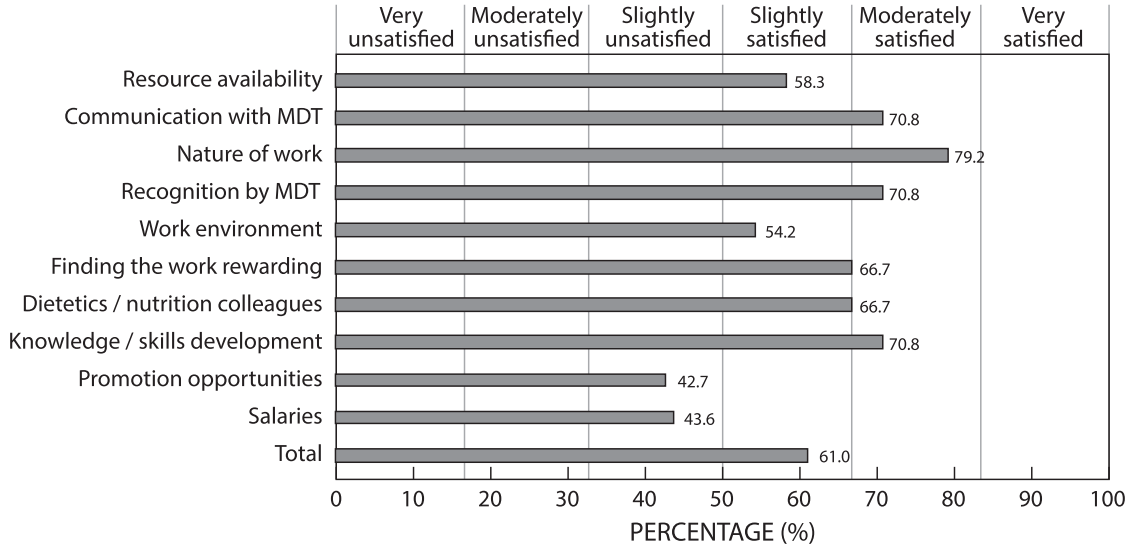
### *Workload scores*

The total median workload score (61.7%) was 'slightly high' (Figure 3). Subscores indicated that respondents experienced their daily work-related tasks as more mentally (80%, 'moderately high') than physically (60%, 'slightly high') demanding. Most of the respondents felt that they accomplished their daily tasks to a moderately high level (80%) and required moderately high effort (70%). Respondents reported feeling slight high (60%) pressure to rush their work while also experiencing slightly high levels (50%) of work-related frustration (defined as feelings of insecurity, discouragement, irritation, stress or annoyance).

No significant associations were found between workload and other variables.

### *Workload scores stratified according to employment settings*

Respondents primarily employed in government settings experienced slightly higher total workloads than those employed in




| JSS | Minimum | 25th percentile | Median | 75th percentile | Maximum |
|---|---|---|---|---|---|
| Total | 33.3 | 54.4 | 61.0 | 69.7 | 95.6 |
| Salaries | 16.7 | 29.2 | 43.6 | 62.5 | 100 |
| Promotion opportunities | 16.7 | 29.2 | 42.7 | 58.3 | 100 |
| Knowledge / skills development | 16.7 | 54.2 | 70.8 | 79.2 | 100 |
| Dietetics / nutrition colleagues | 16.7 | 54.2 | 66.7 | 79.2 | 100 |
| Finding the work rewarding | 20.8 | 54.2 | 66.7 | 79.2 | 100 |
| Work environment | 16.7 | 41.7 | 54.2 | 66.7 | 100 |
| Recognition by MDT | 20.8 | 60.4 | 70.8 | 79.2 | 100 |
| Nature of work | 16.7 | 66.7 | 79.2 | 91.7 | 100 |
| Communication with MDT | 33.3 | 58.3 | 70.8 | 83.3 | 100 |
| Resource availability | 16.7 | 29.2 | 58.3 | 83.3 | 100 |

MDT: Multidisciplinary team

**Figure 1:** Job satisfaction scores (JJS) per theme and total scores for registered dietitians and nutritionists ($n = 224$).

private, higher education and research settings, although the difference in total workload did not quite reach statistical significance ($p = 0.07$) (Figure 4). However, those in government hospitals, clinics and food service perceived their jobs as significantly more physically demanding ($p < 0.0001$), and they experienced significantly more frustration ($p = 0.003$) compared with those in private, higher education and research settings.

## Discussion

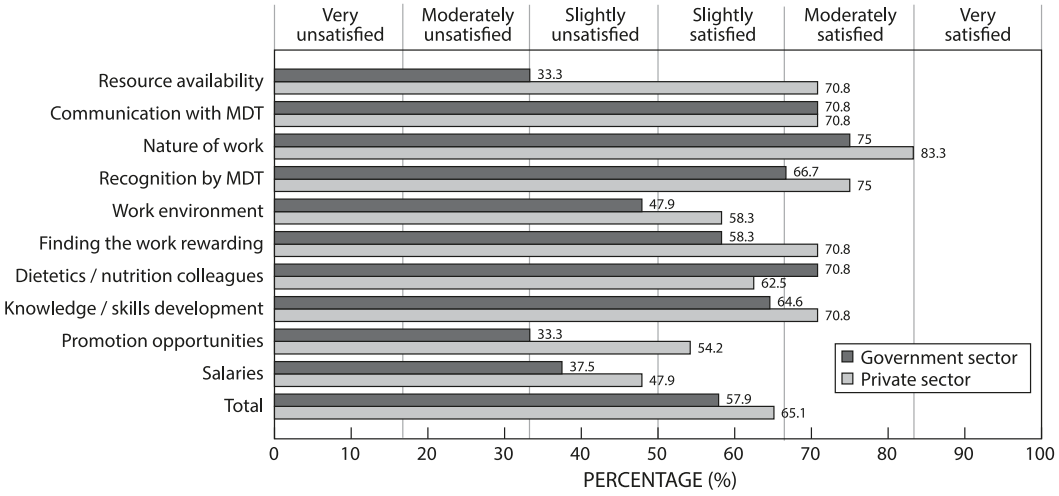
With data collection in 2019, this is only one of three studies that reported on the job satisfaction of South African dietitians[8,20] and the first that included nutritionists. It is also the first study to report workload among dietitians and nutritionists.

### *Job satisfaction*

The total JSS among South African nutrition and dietetic professionals was more than 5% lower in this study (61.0%) than in the 2008 study (65.7%) among South African dietitians[8] but they remained 'slightly satisfied'. These scores align with the average JSS of 63.9% that Spector (1992, as referenced by the Academy of Nutrition and Dietetics[28]) reported based on results of 132 studies with 36 380 respondents across multiple occupations in public and private settings in the United States (the average JSS among healthcare occupations was 62.0%).[28] The negative view of current employment of some respondents was evidenced by 33.8% indicating that they stayed in their current employment because they felt that they had no other choice, and 19.6% because they felt that there were no other job opportunities (in dietetics and nutrition, or otherwise) available. Such negativity concerning the job might be brought on by anxiety, burnout and depression, which has been associated with poor job satisfaction among healthcare professionals.[3,29]

Notably, those primarily employed in government hospitals, clinics and food service had significantly lower total JSS than those in private, higher education and research settings. This finding has important implications for public health in South Africa, as an intention to stay has been positively associated with total JSS and its subscores among dietitians[20,30] and other healthcare professionals.[31] Moreover, total JSS has been significantly linked to whether someone would advise others to enter the dietetic profession,[2] which has important implications for university recruitment and the future workforce in the profession in South Africa.

As in the 2008 study,[8] and aligned with international studies among dietitians and nutritionists[2,32–34] and other healthcare professionals,[9] higher total JSS was significantly associated with being older, having longer work experience, and with higher levels of education and earning a higher salary (all of which are interrelated). These associations may explain why older respondents in this study found the nature and rewards of the work significantly more satisfying than younger respondents while experiencing a marginally higher level of recognition by the MDT than younger respondents. However, as a trained professional, the dietitian or nutritionist should be able to demand respect at any age and experience




| JSS subscores | Minimum | | 25th percentile | | Median | | 75th percentile | | Maximum | |
|---|---|---|---|---|---|---|---|---|---|---|
| | A | B | A | B | A | B | A | B | A | B |
| Salaries | 16.7 | 16.7 | 26.4 | 29.2 | 37.5 | 47.9* | 54.2 | 66.7 | 95.8 | 100 |
| Promotion opportunities | 16.7 | 16.7 | 20.8 | 37.5 | 33.3 | 54.2* | 47.9 | 62.5 | 91.7 | 100 |
| Knowledge/skills development | 16.7 | 16.7 | 50.0 | 58.3 | 64.6 | 70.8* | 75.0 | 83.3 | 100 | 100 |
| Dietetics / nutrition colleagues | 29.2 | 16.7 | 58.3 | 50.0 | 70.8 | 62.5* | 79.2 | 75.0 | 100 | 100 |
| Finding the work rewarding | 20.8 | 25.0 | 45.8 | 56.3 | 58.3 | 70.8* | 70.8 | 86.4 | 100 | 100 |
| Work environment | 16.7 | 16.7 | 37.5 | 50.0 | 47.9 | 58.3* | 58.3 | 70.8 | 100 | 100 |
| Recognition by MDT | 20.8 | 29.2 | 52.1 | 62.5 | 66.7 | 75.0* | 75.0 | 81.3 | 100 | 100 |
| Nature of work | 16.7 | 25.0 | 60.4 | 70.8 | 75.0 | 83.3* | 87.5 | 95.1 | 100 | 100 |
| Communication with MDT | 33.3 | 33.3 | 58.3 | 58.3 | 70.8 | 70.8 | 83.3 | 79.2 | 100 | 100 |
| Resource availability | 16.7 | 16.7 | 16.7 | 58.3 | 33.3 | 70.8* | 50.0 | 87.5 | 100 | 100 |

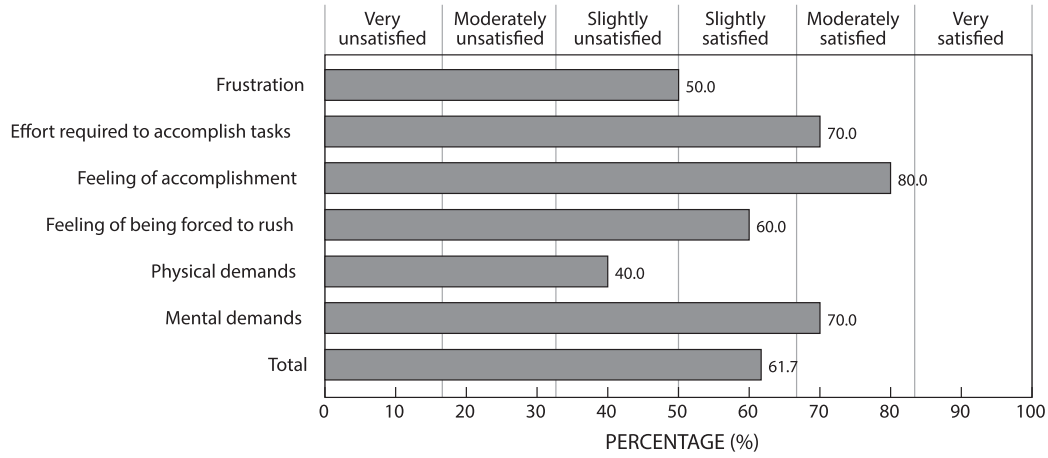
**Figure 2:** Job satisfaction stratified according to primary employment in (A) Government hospitals, clinics and food service ($n = 100$) and (B) Private, tertiary education and research sectors ($n = 124$). MTD = multidisciplinary team. *Indicates a statistically significant difference between the two sectors. $p < 0.05$.

level as an important member of the team. Visser *et al*.[8] argued that these associations with total JSS might reflect unrealistic expectations or inadequate skills in business, administration, entrepreneurship and promotion of their profession among entry-level dietitians, which has implications for curriculum design for the training of dietitians and nutritionists. However, it may also reflect that respect and recognition, which are very important for job satisfaction among health-care professionals,[2,35] are earned with greater experience and knowledge acquisition. With increasing age and education, the likelihood of a leadership position also increases. An American survey among 1 200 dietitians in managerial positions found a total average JSS of 71.5% (moderately satisfied)[28] and showed that the total JSS and all subscores were higher for managing dietitians than normative values for multiple occupations in the United States.[28] Thus, it seems that career advancement is important for job satisfaction, making opportunities for promotion and the development of knowledge and skills important.

In the current study, similar to the 2008 study among South African dietitians,[8] the lowest JSS subscores were obtained for satisfaction with promotion opportunities (2008: 52.5% vs. 2019: 41.7%), showing a drop of more than 10% over the decade between the surveys. Over the same period, access to opportunities for knowledge and skills development (2008: 68.7% vs. 2019: 70.8%) remained more stable in the moderately satisfied category. However, those primarily employed in the public health sector scored significantly lower in the subscore for promotion opportunities than those in the private and higher education settings (33.3% vs. 54.2%). In a recent small survey and qualitative study among dietitians in the South African KwaZulu-Natal province, government hospital dietitians were also most dissatisfied with opportunities for promotion and indicated significant limits to 'career pathing'.[20] Opportunities for formalised continued professional training were found to be limited in both public and private sectors unless paid for out-of-pocket, and dietitians in the private sector expressed a need to be able to

**Table 3:** Lack of resources reported by different primary employment sectors.

| | Government hospitals, clinics and food service management ($n = 100$) | | Private, tertiary education and research sector ($n = 124$) | |
|---|---|---|---|---|
| **Lack of resources** | **Frequency** | **Percentage** | **Frequency** | **Percentage** |
| Office space | 60 | 57.1 | 31 | 24.8 |
| Stationery | 57 | 54.3 | 9 | 7.0 |
| Anthropometric equipment | 59 | 56.2 | 15 | 11.6 |
| Nutritional supplements and feeds | 63 | 60.0 | 15 | 11.6 |
| Equipment for the delivery of feeds | 53 | 50.5 | 6 | 4.7 |

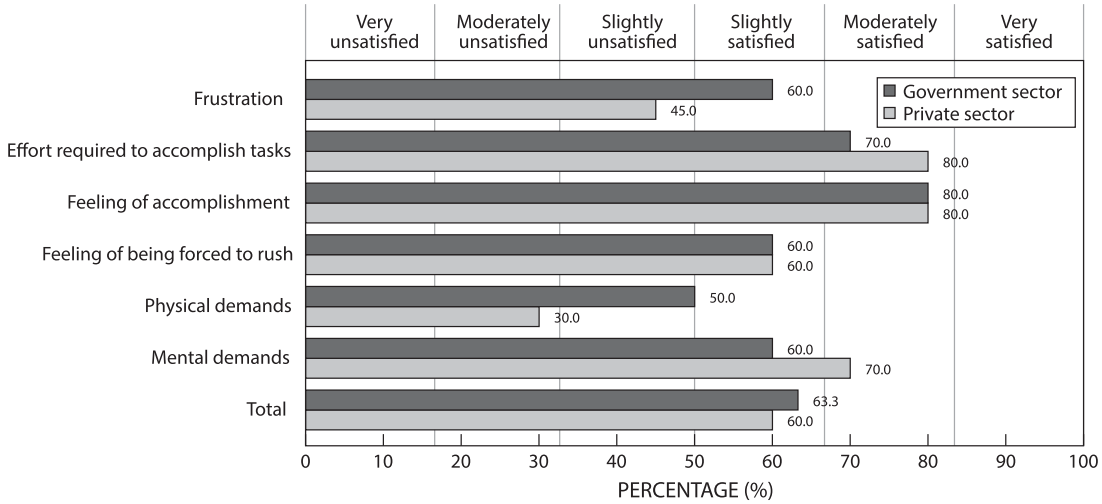



| Workload scores | Minimum | 25th percentile | Median | 75th percentile | Maximum |
|---|---|---|---|---|---|
| Total | 25.0 | 50.0 | 61.7 | 70.1 | 91.7 |
| Mental demands | 10 | 50 | 70 | 80 | 100 |
| Physical demands | 10 | 20 | 40 | 60 | 100 |
| Feeling of being forced to rush | 10 | 40 | 60 | 80 | 100 |
| Feeling of accomplishment | 10 | 60 | 80 | 90 | 100 |
| Effort required to accomplish tasks | 10 | 60 | 70 | 90 | 100 |
| Frustration | 10 | 30 | 50 | 80 | 100 |

**Figure 3:** Workload scores for registered dietitians and nutritionists ($n = 224$).

research new dietetic trends that they could integrate into their practice.[20] These findings have important implications for recruitment and retention policies in the South African context, as advancement opportunities are key factors in employee retention among dietitians.[13]

In this study, satisfaction with salaries (2008: 49.2% vs. 2019: 43.6%) dropped by more than 5% from 2008[8] and was significantly lower for respondents in the public health sector than in other sectors (37.5% vs. 47.9%). Perceived inadequate remuneration is a common contributor to poor job satisfaction




| JSS subscores | Minimum | | 25th percentile | | Median | | 75th percentile | | Maximum | |
|---|---|---|---|---|---|---|---|---|---|---|
| | A | B | A | B | A | B | A | B | A | B |
| Total | 25 | 25 | 53.3 | 49.2 | 63.3 | 60 | 73.7 | 68.3 | 91.7 | 91.7 |
| Mental demands | 10 | 10 | 50 | 50 | 60 | 70 | 80 | 80 | 100 | 100 |
| Physical demands | 10 | 10 | 30 | 30 | 50 | 30* | 70 | 50 | 100 | 100 |
| Feeling of being forced to rush | 10 | 10 | 50 | 50 | 60 | 60 | 80 | 80 | 100 | 100 |
| Feeling of accomplishment | 10 | 20 | 60 | 60 | 80 | 80 | 90 | 90 | 100 | 100 |
| Effort required to accomplish tasks | 10 | 10 | 60 | 60 | 70 | 80 | 80 | 90 | 100 | 100 |
| Frustration | 10 | 10 | 30 | 30 | 60 | 45* | 80 | 70 | 100 | 100 |

**Figure 4:** Workload stratified according to primary employment in (A) Government hospitals, clinics and food service ($n = 100$) and (B) Private, tertiary education and research sectors ($n = 124$). *Indicates a statistically significant difference between the two sectors ($p < 0.05$).

among doctors,[9] nurses,[14,24,36] occupational therapists,[24,25] physiotherapists,[22,24] optometrists[24] and dietitians.[2,8,13,28,33] Studying for a degree as a healthcare professional is costly, not just in monetary terms but also in terms of personal commitment, time, and mental and physical demands; thus, a return on investment is expected. Visser *et al*.[8] found that poor remuneration was a major cause of dietitians leaving the profession; thus, South African dietitians and nutritionists should continue lobbying for fair compensation in salary scales and private fee structures through ADSA and the Professional Board of Dietetics and Nutrition of the HPCSA. Fair compensation directly impacts patient outcomes as adequate time is required for effective behavior-change counselling.

Similarly, in this study, satisfaction with the work environment (2008: 61.3% vs. 2019: 54.2%) dropped by more than 5% from 2008[8] to 2019, and was significantly lower for respondents in the public health sector than in the other sectors (47.9% vs. 58.3%). Among dietitians employed in public hospitals in Sudan,[37] 56% of respondents reported being unhappy about their work environment due to inadequate equipment and lack of technology. In the current 2019 study among South African dietitians and nutritionists, lack of resources accounted for the most marked difference in levels of satisfaction between those working in the private, higher education and research settings and those in the government hospitals, clinics and food service (75.0% vs. 33.3%). The dietitians and nutritionists in the public sector reported lack of office space (57.1%), stationery (54.3%) and anthropometric equipment (56.2%), and the dietitians also noted nutritional supplements and feeds (60%), and equipment for the delivery of feeds (50.5%), all of which have major implications for the quality of patient care. In a survey of 848 renal dietitians in the United States, respondents cited a lack of tools such as computers, callipers and food models[38] among the barriers to adequately assessing the nutritional status of patients on dialysis. Similar dissatisfaction with resource availability was also recently reported in a study among dietitians in KwaZulu-Natal, particularly in the public sector.[20] South African dietitians and nutritionists should advocate for provincial health authorities to prioritise accessibility to vital equipment and supplies in the public health sector that dietitians and nutritionists need to screen, assess and, in the case of the dietitians, treat patients effectively.

Other components of the work environment include psychosocial factors like autonomy, meaning, respect and recognition,[2,9,29] and the work being interesting and varied.[34] Among dietitians, supervision,[24] the 'departmental vibe'[20] and team collegiality, which refers to relationships with other professionals in the workspace[13] and being valued by the team,[2] contribute to a positive work environment. The qualitative study among dietitians in KwaZulu-Natal found that job satisfaction was derived from recognition from patients and feelings of value by helping disadvantaged populations.[20] Compared with 2008,[8] satisfaction with 'finding the work rewarding' dropped only slightly but switched from moderately satisfying to slightly unsatisfying (2008: 68.3% vs. 2019: 66.7%). This may be a red flag, as a study among Taiwanese dietitians found that an unsatisfactory work environment is a significant predictor of emotional exhaustion.[39]

Over time, the JSS subscores for recognition as part of the MDT and communication with the MDT remained quite stable (2008: 71.2% vs. 2019: 70.8%, and 2008: 72.2% vs. 2019: 70.8%). Satisfaction with recognition as part of the MDT was significantly lower in the public sector, but there were no differences between the sectors regarding communication with the MDT. Conversely, the KwaZulu-Natal study found that communication with the MTD was perceived as better among dietitians in the public setting, while dietitians in private practice felt isolated from the mentorship and team communication that they perceived to exist in the public hospitals.[20] In the current study, privately practising dietitians were grouped with those in higher education and research settings due to a relatively small sample size that did not allow the further breakdown of the groups. The recent KwaZulu-Natal study also noted that recognition of dietitians as part of the MDT varied greatly even in public health settings, from genuinely good to being ignored and undervalued, with other health professions infringing on dietitians' scope of practice.[20]

Compared with 2008,[8] satisfaction with relationships and communication with other dietitians/nutritionist colleagues in the work setting (2008: 70.4% vs. 2019: 66.7%) dropped slightly but switched from moderately satisfying to slightly unsatisfying. This subscore was significantly higher among dietitians/nutritionists in government hospitals, clinics and food service than those primarily working in private, higher education and research settings. The finding concurs with those of other studies, which attributed it to rivalry and competition for work among privately practising dietitians.[20,37]

Notwithstanding the above, South African dietitians and nutritionists confirmed the findings of the 2008 survey,[8] namely that they genuinely love their vocation. Most cited loving what they do as the main reason for remaining in their current jobs and, as in 2008,[8] satisfaction with the nature of work remained the highest subscore (2008: 79.3% vs. 2019: 79.2%). Similar findings were obtained in other studies among dietitians,[37] and in a recent qualitative study among dietitians in various settings in the United States, the importance of passion, motivation and meaningfulness for job satisfaction emerged as a major theme.[2] The subscore for the nature of work was significantly higher among those primarily employed in the private, higher education and research sectors (classified as very satisfied) than in public healthcare. This finding might imply that problems in resource availability, poor salaries and little opportunity for promotion, in which dietitians and nutritionists in the public healthcare settings scored the lowest, may erode the joy that dietitians/nutritionists generally find in their chosen vocation.

### *Workloads*

No previous study has reported the perception of workload among dietitians or nutritionists in South Africa. Although the difference in total workload did not quite reach statistical significance, those in the government sector experienced higher total workloads, which was specifically related to finding their jobs significantly more physically demanding and experiencing significantly more feelings of insecurity, discouragements, irritation, stress and annoyance, which contribute to frustration at work, than those in the private sector. A study among dietitians registered in Queensland, Australia, found that increased workload decreases job satisfaction.[13] Workload plays a significant role in affecting the efficiency and quality of inpatient care.[38] For example, patients' length of hospital stay has been shown to increase as workload increases, while high dietitian-to-patient ratios have been identified as barriers to implementing dietary guidelines in haemodialysis units.[38] Moreover, a high

workload among dietitians is associated with reduced empathy[40] and lower patient-centred care.[41]

In 2010, 763 dietitians worked in the public sector in South Africa, with 0.16 per 1 000 population.[42] Current dietitian/nutritionist-to-patient ratios in the various South African healthcare setting need to be investigated. Many developing countries, including South Africa, do not plan and manage workforce development adequately.[43] Projection models based on specific population demands and continuing workforce data are needed to detect professional practice difficulties and accurately anticipate dietetic staffing requirements, particularly in the public health sector.[44]

## Limitations

The study was slightly underpowered because of a low response rate of 7%. With 222 respondents, the margin of error for the study is estimated as 6.4%, at a confidence level of 95%, for an unknown proportion. The low response rate may have been due to the South African Protection of Personal Information Act, 2013 (POPIA), which was being phased in by the HPCSA and ADSA at the time of data collection and prevented them from giving the researchers access to physical and email addresses of the study population. Nutritionists were also underrespresented, which may or may not reflect low current employments status in practising nutrition and dietetics; however, this would need further investigation. Nevertheless, the findings of this study align well with those of the only other two previous studies among South African dietitians and those of international surveys among dietitians and other healthcare professionals.

## Conclusion

With data collection in 2019, this study found that registered dietitians and nutritionists in South Africa were experiencing only slight job satisfaction. Notably, dietitians and nutritionists employed primarily in the public health sector had significantly lower job satisfaction, particularly regarding salaries, promotion opportunities and resource availability, than those working in the private health, higher education and research sectors. Respondents working in government hospitals, clinics and food service also reported significantly higher physical work demands and frustration levels than in other sectors. However, the majority of South African dietitians and nutritionists in this study reported loving their chosen vocation.

Recommendations include lobbying for fair compensation in salary scales and private fee structures, career pathing, which should include promotion opportunities, allocation of adequate physical and human resources in the public health sector, boosting the professional image of registered dietitians and nutritionists, and benchmarking realistic staffing ratios for dietitians and nutritionists ideally based on patient outcomes. In addition, undergraduate programmes should continuously evolve according to the public health needs in South Africa while also expanding business skills and entrepreneurship, and fostering resilience among graduates.

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