Original Article

Socio-Demographic Characteristics as Determinants of Performance of Clinical Nutrition Interns in Selected Health Facilities in Kenya

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ABSTRACT

Research indicates a lack of clear understanding of performance metrics within clinical practice among nutrition interns. The performance of nutrition health care, particularly in clinical settings, remains under-assessed, leading to competency issues, higher patient mortality and dissatisfaction with outpatient services. Despite KNDI placing interns since 2015, over 500 nutritionists are released yearly without a clear linkage between their competencies and performance. This study aimed to determine the relationships between socio-demographic characteristics and the performance of clinical nutrition interns placed by KNDI in 41 internship centres. A cross-sectional analytical design was used, allowing for data collection at a single point in time. Descriptive and inferential statistics, including linear regression, were applied to analyze data. Three-level data analysis was employed: descriptive, bivariate, and multivariate. Most clinical nutrition interns were between 22-28, accounting for 95.1%, and females were the majority, accounting for 79.8%. Further analysis was done to see how far the different categories were from the expected frequencies, revealing that they were statistically significant P≤ 0.05 for all the measures. The mean score for general workplace performance and Job-specific performance was above 4.0. All the measures of General workplace performance were subjected to Principal axis factoring. The sample size was adequate (KMO=0.872; Bartlet Test of Sphericity=X2=114, df=21; P≤ 0.05 allowing further analysis. It was further established that two factors emerged out of all eight measures loaded to establish GWP, revealing two categories of performance in the GWP Sphere. Category 1 accounted for 38.29%, and Category 2 accounted for 28.45% of the total variance of GWP, collectively accounting for 67% of variability, leaving room (33%) for unexplained variation. All the eight measures of JSP, on the other hand, were also subjected to Principal Axis factoring, and the results revealed that the sample size was adequate (Kmo=0.917, Bartlet Test of Sphericity =X2=1509, df=28, P≤ 0.05.JSP had a unity as a measure, accounting for 61.83%. Socio-demographic characteristics

(R2 =17.2; F=3.23; df=5; p=0.007 significantly influenced the JSP accounting for 17.2% of its variance. In category 1, GWP, socio-demographic characteristics had a significant influence (R2=14.7; F=2.67; df=5; p=0.022). In category 2, GWP, socio-demographic measures had no significance in relation to the performance of clinical nutrition interns. (P>0.05). The findings suggest tailoring programs to specific performance aspects and considering relevant demographic factors can improve effectiveness.

INTRODUCTION

Internship is a critical area that allows graduates from colleges to develop professional expertise as they form the initial phases of practice. As the primary goal of internship training is to grow and establish competencies in their professional domains, the performance of an intern is a crucial area to evaluate in order to develop nutrition experts in the wide field of nutrition science. (The Nutritionists and Dieticians Act No. 18 of 2007 – CAP253B, 2019). Whether paid or unpaid, internships primarily give undergraduate, graduate, and career-changing students the chance to gain practical experience in their chosen field of study (Galbraith et al., 2018).

Several studies have investigated performance measurement in delivering health care services. For instance, a systematic review has been done on performance measurement indicators in healthcare systems, mainly focusing on medical practitioners, offered variation in several appropriate methods and discovered the non-existence of a comprehensive approach to evaluating performance in healthcare (Nida & Abu Jbara, 2016).

Age, gender and income may affect the performance of healthcare service providers (Naidu, 2009). Few studies have been shown on the same; for instance, a cross-sectional study in Busia District, Kenya, found that selected socio-demographic characteristics of community health workers affect the delivery of home visits during pregnancy. It was indicated that the sex, age, experience, and level of education of the community health workers affected their performance in record keeping, the use of job aids, counselling on care during pregnancy, patient fulfilment, and enablement. However, there are few studies for comparison (Crispin et al., 2012).

KNDI internship guidelines have defined standard performance tools to be linked with the critical competency level in measuring the performance of

clinical nutrition interns within two specific domains. The first domain, General workplace performance, is defined by specific measures, including self-motivation, ethical behaviour, attendance, attitude, punctuality, appropriate dress, asking appropriate questions, and acceptance of criticism. The second domain, which is specific job assignment, is defined as sufficient knowledge to perform tasks, written communication tools, meeting deadlines, analytical skills, verbal communication skills, technical skills, setting priorities and taking the initiative to get a job done,(The Nutritionists and Dieticians Act No. 18 of 2007 – CAP253B, 2019). This new concept will focus on socio-demographic characteristics as possible determinants and performance as the output. The utmost output will be to develop an externally oriented performance conceptual framework of clinical nutrition practice within the context of socio-demographic characteristics.

MATERIALS AND METHODS

Location of Study

This study was conducted across all the KNDI-accredited internship centres in Kenya. These centres were distributed across the country.

Study Population

The study population was 483 Clinical nutrition interns placed in 41 internship centres within 27 counties in Kenya between 1st March to 30th November 2022.

Research Design

A cross-sectional analytical design was used. It was appropriate because it allowed data to be collected at one particular time without changing elements (Wang & Cheng, 2020) Data was collected once within a recall period of one month and analyzed once. One month recall period presented the last assessment and represented a cumulative average of nine (9) months.

Sample Size

The required sample size was calculated based on the standard formula by Cochran (1963), as cited by Fisher et al. (1998), as shown

$$n=(Z^2pq)/e^2$$

Where n= desired sample size, Z= standard normal deviation, which is 1.96, p =was taken as (0.5) since the prevalence is unknown in the study area, q= population without the characteristics being measured, which is, q=1-p. Therefore, (1-0.5) e=degree required for this accuracy=0.05. Substituting the values from the formula: (1.96 x1.96) x 0.5(1-0.5)/ (0.05) ^{2}=385.

Finite correction for proportionality was calculated as n=N/1+N(e)^2; the population of interns in Kenya per year is approximately 500, less than ≤10000.

n=desired sample size when study population ≤10000

N=estimate of the population size

n=500/1+500(0.05) ^{2}=222.22

=222+22.2 adjusted 10% non-response

=245 interns

Sampling Techniques

The study adopted proportionate-to-centre and simple random sampling techniques. A sampling frame was developed by adding the total number of interns across the 41 internship centres, which gave us 483 clinical nutrition interns. Thereafter, a sample size was determined from the 483, using Fischer's formula to give us 245. To distribute this 245 across the 41 internship centres, proportionate-to-centre sampling was adopted, whereby, the total number of interns per centre was divided by the total number of interns across all the centres and multiplied by the sample size to get the number needed per centre. Then a simple random method was used to select the minimum per centre. A selection without replacement after raffling was done and this was repeated in all the 41 internship

centres. This meant that each intern had an equal chance of being chosen to participate in the study.

Data Collection Tools/Instruments

The study instrument was secondary data from preceptors' reports on the two performance domains and a consolidated structured questionnaire. This was structured to include a section on socio-demographic characteristics and competency level measures. Measurement of those factors was done.

Data Collection Techniques

Data was collected in two phases, including performance data and generated from the preceptors' report, on the clinical nutrition intern performance, which was matched with a structured field questionnaire on Socio-demographic characteristics of the clinical nutrition interns. Performance data collection (phase I): This phase involved collecting data on interns' performance within the general workplace and specific job assignment performance. This data was generated from the performance score sheet records of the preceptor for each candidate based on the digital platform as set by the KNDI performance preceptors score sheet. Each intern was identified by index number.

Socio-demographic characteristics (phase II): Every intern's data for this phase was matched with performance data using index numbers. The data was generated through a follow-up filling in of a structured questionnaire on socio-demographic characteristics. Each intern in cohort 2022 (Eighth Cohort) was given an equal chance to participate in the survey at the nearest town close to their current areas of residence. Such included Nairobi, Kisumu, Nakuru, Eldoret, Nyeri and Mombasa.90 percent turned out physically while for the 10 percent who did not turn out, data was collected virtually using online Google forms. Bulk SMS was used for ease of communication with interns, followed by a phone call.

Pilot Study or Pretesting

The questionnaires were pretested using the preceding cohort seven, a group of interns undergoing the one-year internship. Testing helped enhance consistency in the interpretation of questions and the time taken for the interview.

Validity

The validity of the instrument was entered in two forms. Content validity focused on competency variables based on the Nutrition Care Process (NCP), Clinical management of diseases and Nutrition counselling. Quizzes in this category were validated content-wise by experts supported by classical theories drawn from textbooks. Construct validity was assured based on principal component analysis. Communality scores were used to accept highly performing measures. Such a communality score above 0.4 was considered acceptable and the ideal threshold cut-off was 0.7 and above (Eaton et al., 2019). Socio-demographic questions were straightforward and were subjected to a validity test.

Reliability

The test-retest method was used to establish the reliability of each question. Any deviation was evaluated for each question during the test-retest method. The questionnaire was administered to ten (10) per cent of the sampling frame of the preceding cohort, (7) within one week. Statistical reliability adopted Cronbach alpha(α) to establish internal consistency mainly for performance variables. This was done during the primary survey.

Variables

This study was based on two variable domains, as the table below indicates. This included the dependent variable, which was performance and independent variables, which consisted of socio-demographic characteristics and competency level.

Data Analysis

Data analysis was done using both descriptive(Z-score) and inferential statistics. Means and percentages were used to describe data in a

meaningful manner. The initial determination of performance engaged the use of Principal axis factoring to generate individual case Batt scores for purposes of linear analysis. The principal axis factoring enabled the performance level by factor identity to assign each a performance weighing based on the communality ideal threshold set at 0.7 for each iteration (Eaton et al., 2019). The Batt score generated for each case allocated a continuous scale for performance patterns as dependent variables.

Linear regression was used in the hierarchical sequence to determine the relationship between socio-demographic characteristics and performance and to build models that related socio-demographics with performance as follows;

$$Yp = \beta x1 + \beta x2 + constant$$

The coefficient of determination (R^2) was used to assess the variability of the influence of performance on socio-demographic characteristics.

A T-test was used to obtain the magnitude of the contribution of each variable in the relationship.

Logistical and Ethical Considerations

The proposal was submitted to the Kenyatta University Graduate School for approval and then presented for review and approval by the Kenyatta University Ethical Review Committee (KUERC). A research permit was acquired from the National Council of Science, Technology and Innovation (NACOSTI). Authority was sought from KNDI for carrying out the research using clinical nutrition interns across the country. Confidentiality was ensured by providing the participants with their KNDI Indexing numbers, and the participants were informed of the purpose of the study. Participation in the study was voluntary.

RESULTS

Socio-demographic Characteristics

Socio-demographics were looked at based on age, gender, marital status, fiancé/fiancée relationship and religion. Four of the measures were assumed to have some influence on the performance of the interns (while one dropped due to insignificant pass weight). Based on the table below, the majority were between 22 and 28, accounting for 95.1%, while 29-35 for 4.6% and >42 for 0.3%. The majority of the group interviewed were female, accounting for 79.8%, and the minority were male, accounting for 20.2%. Most of the interns were single, constituting 81.6%, followed by married 17.5% and then at least 0.6% were separated. Christians formed the largest group with a percentage proportion of 94.5%, followed by Muslims at 4.6%, others at 0.6% and the least, Hindus at 0.3%.

Further analysis was done to see how far the different categories were from the expected frequencies, revealing that they were statistically significant for all the measures. Age (22-28) (z=16.5; p<0.001), Age (29-35) (z=9.3; p<0.001), Age (>42) (z=11.2; p<0.001). Gender was also revealed to have been statistically significant: male (z-score=7.9; p<0.001) and female (z-score=7.9; p<0.001). Marital status was also statistically significant, married (z-score=4.6; p<0.001), single (z=12.5; p<0.001) and separated (z=0.1; p<0.001). Religion was also found to be statistically significant: Christianity (z=18.1; p<0.001), Muslim (z=7.3; p<0.001), Hindu (z=9.5; p<0.001) and others (z=9.3; p<0.001).

Table 1: Socio-demographic Characteristics

Socio-demographic characteristics (N=245)	Expected frequency (percent)	Frequency (n)	Proportion (%)	Z-Score
Age	33.30			
22-28		233	95.10*	16.50
29-35		11	4.60 *	9.30
>42		1	0.30*	11.20
Gender/sex	50.00			
Male		50	20.20*	7.90
Female		95	79.80*	7.90
Marital status	33.30			
Married		43	17.50*	4.60
Single		200	81.60*	12.50
Separated		2	0.60*	0.00
Religion	25.00			
Christianity		231	94.50*	18.10
Muslim		11	4.60*	7.30
Hindu		1	0.30*	9.50
Others		2	0.60*	9.30

* $p < 0.01$

Performance Assessment

Characteristics of General Workplace Performance

The general workplace performance was assessed based on "attendance", "punctuality", "appropriate dress", "attitude", "acceptance of criticism", "asking appropriate questions", "self-motivated" and "practices ethical behaviour". An analysis was performed to describe the general workplace performance measures, as displayed in Table 2. The results below demonstrated a performance mean score above 4.0 across all measures, with an average above 4.2 when measures are combined. This is high and depicts a high level of general workplace performance. Within the sub-measures, it was established that interns performed highest in "attendance" (Mean =4.42(0.78)) while the lowest performance was in "acceptance of criticism" (Mean=4.13(0.70)).

Table 2: Mean Score of General Performance Measures

General performance Measures (N=245)	Mean (SD)
Attendance	4.42(0.78)
Punctuality	4.28(0.79)
Appropriate dress	4.39(0.71)
Attitude	4.22(0.72)
Acceptance of criticism	4.13(0.70)
Asks appropriate questions	4.15(0.76)
Self-motivation	4.14(0.79)
Practices ethical behaviour	4.25(0.69)

Characteristics of Job-Specific Performance

Job-specific performance was analyzed based on the following eight measures; "sufficient knowledge to perform tasks", "verbal communication skills", "written communication skills", "analytical skills", "technical skills", "meeting deadlines", "taking the initiative to get a job done" and "setting priorities". An analysis was performed to describe the Job-

specific performance measures, and the results are displayed below in Table 3. The results demonstrated a performance average mean score above 4.0 across all measures, highly depicting high-level job-specific performance. Within the sub-measures, it was established that interns performed highest in "taking the initiative to get a job done" (Mean=4.18(0.75)). At the same time, the lowest performance was recorded in "analytical skills" (Mean=3.89(0.70)).

Table 3: Mean Score of Job-specific Performance

Performance Measures (N=245)	Mean (SD)
Sufficient knowledge to perform the task	4.02(0.69)
Verbal communication skills	**4.09(0.72)**
Written communication skills	4.11(0.68)
Analytical skills	**3.89(0.70)**
Technical skills	**4.04(0.70)**
Meeting deadline	**4.14(0.75)**
Taking the initiative to get a job done, including overcoming obstacles	**4.18(0.75)**
Setting priorities	**4.10(0.75)**

General Workplace Performance Assessment

To better understand the core measures that determine performance within the two domains, a principal factor analysis was done to establish each domain's performance pattern. First, all the measures of general workplace performance were subjected to principal axis factoring, which required a sample size adequacy determination for validity purposes. The sample size was adequate (KMO=0.872; Bartlet Test of sphericity (χ^2=1114, df=21, P≤0.05), allowing further analysis. Results further established that two factors emerged from the eight measures loaded to establish general workplace performance, revealing two categories of performance in the general workplace performance sphere. Performance Category 1 accounted for 38.29% of the variance in general workplace performance, which was dominated by intrinsic factors, and Performance Category 2 accounted for 28.45%. Both performance categories accounted for 67% of the variability in the original variables, leaving only 33% of any other factor that may not have been considered an indicator. This suggested that two latent influences were associated with performance measurement, but a room (33%) remained of unexplained variation.

The results isolated two categories of General Workplace performance. Category (1) was predominantly made up of intrinsic traits, having met the ideal threshold of 0.7 communality cut-off and included "attitude", "acceptance of criticism", "Asks appropriate questions", "self-motivation" and "practices ethical behaviour" and among them "attitude " and "self-motivation" emerging as the best measures. However, it was noted that punctuality (extrinsic) also met the threshold but trailed inferior to the intrinsic traits. The other extrinsic traits were ruled out. Category (2), all the measures did not meet the ideal threshold communality of 0.7, being ruled out.

Principal Factor Analysis (Extraction)

Table 4: General Workplace Performance

General Workplace Performance Measures (N=245)	Communalities	
	1	2
Attendance	0.65	0.57
Punctuality	0.72	0.50
Appropriate dress	0.65	0.42
Attitude	0.76	0.26
Acceptance of criticism	0.75	0.31
Asks appropriate questions	0.75	0.36
Self-motivation	0.76	0.32
Practices ethical behaviour	0.75	0.09

*Eigenvalue set at 1

Job-Specific Performance

All the eight measures of job-specific performance were also subjected to Principal axis factoring. The results revealed that all measures' sample size was adequate KMO = 0.92, Bartletts Test of sphericity = $X2 = 1509$, df = 28, P≤0.05. It was further established that the eight measures for general performance had unity as a measure of job specificity, accounting for 61.83% of the job-specific performance based on the Eigenvalue set at 1. However, "technical skills" and "taking the initiative to get a job done, including overcoming obstacles" dominated, being the only ones that met the ideal threshold of 0.7, hence dominating the Job-specific performance and "verbal communication skills" being the least. The clinical nutrition interns focused more on their technical skills and the urge to get results.

Principal Factor Analysis (Extraction)

Table 5: Job-specific Performance

Performance indicator (N=245)	Communalities
Sufficient knowledge to perform the task	0.59
Verbal communication skills	0.51
Written communication skills	0.56
Analytical skills	0.64
Technical skills	**0.70**
Meeting deadline	0.60
Taking the initiative to get a job done, including overcoming obstacles	**0.71**
Setting priorities	0.63

Relationship between Socio-demographic Characteristics and Performance of Clinical Nutrition Interns in Kenya

An attempt was made to establish the relationship between socio-demographic characteristics and the performance of clinical nutrition interns. Performance was extracted in three categories. This included General workplace performance category one (Accounted for 38.29% and only the intrinsic measures dominated) and general workplace performance category two (accounted for 28.45% and all the measures did not meet the cut-off threshold communality of 0.7, hence were all ruled out), and Job specific was extracted as a single factor/unity accounting for 61.83%. (With only two intrinsic characteristics dominating). It was further found that socio-demographic characteristics ($R^2 =17.20$; F = 3.23; df = 5; p=0.007) significantly influenced job-specific performance accounting for 17.20 % and 18.30% of its variance.

Table 6: Effect of Socio-demographic Characteristics on Job-specific Performance

Variables	R^2	df	Mean	Frequency	p-value
Socio-demographic characteristics	17.20	5	3.40	3.20	0.01

A further analysis to determine which specific socio-demographic indicator had a significant influence revealed that only two measures had significantly influenced Job specific performance: "age" (β=0.44, **t**=2.05; **p**=0.04) and "marital status" (β=0.40, t=2.11, **p**=0.04). Other measures were not significant. This implies that socio-demographic measures had actual factors that could influence job-specific performance.

Table 7: Effect of Socio-demographic Characteristics on Job-specific Performance

Variables	Unstandardized β	Co-efficient Std. Error	Standardized coefficients Beta	t	p-value
Socio-demographic					
Age	**0.44**	**0.22**	**0.12**	**2.00**	**0.05**
Gender	0.16	0.15	0.06	1.13	0.26
Marital status	**0.40**	**0.19**	**0.15**	**2.18**	**0.03**
Fiancé/fiancée relationship	0.02	0.05	0.02	0.30	0.76
Religion	0.18	0.18	0.06	1.01	0.31

On the other hand, further analysis was done on the influence of the two categories of General workplace performance; in category one, General workplace performance, socio-demographic characteristics had a significant influence (R^2 = 14.70; F = 2.67; df = 5; p = 0.02).

Table 8: Effect of Socio-demographic Characteristics on General Workplace Performance (category 1)

Variables	R^2	df	Mean	Frequency	p-value
Socio-demographic characteristics	14.70	5	2.90	2.70	**0.02**

However, the t-test revealed that no socio-demographic factor influenced the general performance category one as a single item.

Table 9: Effect of Socio-demographic Characteristics on General Workplace Performance (category 1)

Variables	Unstandardized B	Co-efficients Std. Error	Standardized coefficients Beta	t	p-value
Constant 1 Socio-demographic					
Age	0.26	0.23	0.07	0.16	0.25
Gender	0.24	0.15	0.09	1.65	0.10
Marital status	0.31	0.19	0.12	1.64	0.10
Fiancé/fiancée relationship	0.04	0.05	0.01	0.08	0.94
Religion	0.29	0.18	0.09	1.64	0.10

Variables	Unstandardized B	Co-efficients Std. Error	Standardized coefficients Beta	t	p-value
Constant 2 Socio-demographic					
Age	0.30	0.23	0.08	1.30	0.20
Gender	0.24	0.15	0.09	1.63	0.11
Marital status	0.30	0.19	0.11	1.55	0.12
Fiancé/Fiancée relationship	0.00	0.05	0.00	0.03	0.98
Religion	0.30	0.18	0.10	1.65	0.10

In category two, General workplace performance, socio-demographic characteristics (R^2=11.70; df=5; p=0.17) had no significance on the performance of clinical nutrition interns.

Table 10: Effect of socio-demographic Characteristics on General Workplace Performance (category 2)

Variables	R^2	df	Mean	Frequency	p-value
Socio-demographic characteristics	11.70	5	2.34	1.57	0.17

DISCUSSION

Socio-demographic Characteristics and Nutrition Service Performance

The study's socio-demographic analysis of clinical nutrition interns encompassed age, gender, marital status, and religion, emphasizing their potential influence on internship performance. Most interns fell within the 22-28 age range, comprising 95.1% of the sample. Research has shown that age can impact career development, with individuals in their twenties typically navigating early career stages (Goedereis et al., 2023). A similar study has shown employees from age 25-44 years belong to the establishment career stage, and their career needs and characteristics are to achieve & advance in their career, increase the competence commitment, integrate work & personal sphere, involvement and Intimacy (Chourasiya & Agrawal, 2019).

Regarding gender distribution, the study found that 79.8% of the interns were female, while 20.2% were male. Gender can play a role in various aspects of work dynamics, and this skew in distribution may have implications for the work environment and interactions within the clinical nutrition setting. Moreover, planners at predominantly female-managed offices experience greater gender sensitivity, flexible work-life benefits, and perceived equal opportunity. Applying the theory of representative bureaucracy to planning management may lead to workplace policies and communication that better reflect the interests of staff planners of all genders. The study also finds that women in top management roles tend to serve as "agents of change" within their organizations (Turesky & Warner, 2020).

Similarly, in a study on gender relations, women and their families recognise women's potential to contribute to the family's economy, representing a fundamental change in the cultural norms that govern society. In Iran, the opportunity for women to adopt a public role in the health worker programme has led to more democratized households. Like Pakistan, Iran has also seen the emergence of women as local leaders and political activists. Volunteers have become skilful in gaining support from the Ministry of Health and have become involved in advocacy via petitions and local media campaigns to lobby for broader health and well-being services for the community (Steege et al., 2018).

Another study on preferred leadership styles by gender showed that when comparing leadership attributes by gender, women scored slightly higher than men for the attribute of individual consideration under the transformational leadership style (Miranda, 2019).   Marital status was significant, with 81.6% of interns being single, 17.5% married, and 0.6% separated. Research on marital status and work commitment suggests that single individuals may have different work-related priorities than their married counterparts (Shockley & Allen, 2007). Marriage and relationships can be considered significant factors affecting employee performance in an organization. Social factors such as marital and family issues, finances and illness may cause mental instability, which can influence job performance (Monica, 2017). Contrary to the fact that marriage may cause mental instability, Monica (2017)   found that women who were employed and had family roles had better physical and mental health, which promoted better job performance than their single counterparts. Since relationships have been reported to affect performance, the same factors may influence clinical nutritionists' interns' performance and must be established.

Another study shows that, as graduates become embedded in their employing organization, the barriers to work-life balance pile up, primarily in the form of heavy demands on graduates' time and energy. In their interviews with graduate trainees, the authors concluded that while graduates are prepared to work long hours and maintain heavy workloads during the early stages of their careers to advance within the organization, they see this as a short-term process. In the longer term, and once they begin to experience increased demands from their family responsibilities, they expect to work more reasonable hours and achieve a more balanced lifestyle. Should this not occur for whatever reason, they would consider leaving the organization – as they "work to live, not live to work" (Alexandra Beauregard, 2007).

Additional research reveals economic considerations, such as the cost of living and financial stability, can influence marital decisions. Young professionals may delay marriage until they feel financially secure, and pursuing an internship may be a part of this career-building process (Willoughby et al., 2015). Religious affiliation was also examined, with Christians forming the largest group (94.5%), followed by Muslims (4.6%), others (0.6%), and Hindus (0.3%). Cultural and religious factors may influence dietary choices and practices, crucial aspects of clinical nutrition. Further to this, a study on religious affiliation, quality of life and academic performance, one of the participants, who was identified as a fundamental Christian, emphasized the significance of the support religion provides when confronted with challenges: "Even if I have confidence in my strength, there is a higher power to help me, and spiritual beliefs can also help with family conflicts" (Henning et al., 2015).

Performance in Nutrition Health Care Delivery

General Workplace Performance

The Principal Axis, two primary components emerged from the factoring analysis for overall workplace performance, accounting for roughly 67% of the variability. The results isolated two categories of General Workplace performance Category (1) was predominantly made up of intrinsic traits, having met the ideal threshold of 0.7 communality cut-off and included "attitude", "acceptance of criticism", "Asks appropriate questions", "self-motivation" and "practices ethical behaviour" and among them "attitude" and "self-motivation" emerging as the best measures. However, it was noted that punctuality(extrinsic) also met the threshold but trailed inferior to the intrinsic traits. The other extrinsic traits were ruled out. Category (2), all the measures did not meet the ideal threshold communality of 0.7, being ruled out.

In a study conducted by Illinois State University on determining the personal attributes perceived by Dietetic Internship Directors and Preceptors from

varying generations that lead to success in Dietetic Internships. It was found that the top ten reported personal attributes included: motivation, completion of tasks, dependability, respect, positive attitude, flexibility, listening skills, asking questions, open-mindedness, and professionalism. Dietetic Internship Directors perceived flexibility (M=9.53) and punctuality (M=9.34) to lead to success significantly (p=0.017) more than Preceptors (M=9.30; M=9.04). Results showed significant differences in success-associated attributes of Interns among the primary setting, generation, and Registered Dietitian status of Directors and Preceptors. The Behavioral category of personal attributes was perceived to be more important than Communication or Interpersonal (Smythe et al., 2015).

This was similar to my research findings that the performance pattern of clinical nutrition interns is predominantly associated with intrinsic factors. Notably, the best predictors of overall work performance were "attitude" and "self-motivation". This result emphasizes how crucial these personal qualities are to interns' overall efficacy in the workplace. The existence of unexplained variation (34%) implies that additional factors may influence overall workplace performance that the study's eight measures did not account for.

Work motivation has been extensively studied within the field of organizational psychology, and many theories have been developed over the years. In a study titled "Do Attitudes towards Work or Work Motivation Affect Productivity Loss among Academic Employees?" Work motivation has previously been an essential factor for employee performance levels. Employees with intrinsically high levels of motivation are more likely to engage in a task and put more effort into the task (Lohela-Karlsson et al., 2022)Again, a study on the effect of occupational self-efficacy on work performance through intrinsic work motivation found that Week-level intrinsic motivation significantly increased week-level work performance (g= 0.27, p< 0.01).

The significant positive interaction between occupational self-efficacy and work performance somewhat declined after intrinsic motivation was added to the analysis (Çetin & Aşkun, 2018).

Job-Specific Performance

For Job-Specific Performance, the results indicated strong coherence among the eight measures in evaluating job-specific abilities, with a single factor unity accounting for 61.83% of the job-specific performance. The indicator that was found to be most relevant in describing job-specific performance was "taking the initiative to get a job done, including overcoming obstacles." This emphasizes how crucial initiative and problem-solving abilities are to job-specific duties in nutrition and healthcare.

It's evident that personal initiative has become an essential phenomenon in organizations and has been the focus of rapidly expanding research attention in recent years. This three-study investigation formulated and tested a moderated mediation model of employees' personal initiative process in organizations. Specifically, the climate for the initiative was hypothesised to interact with social astuteness in the prediction of individual initiative in Study 1, and the results supported this hypothesis. Additionally, as hypothesized in Study 2, the employee self-reported personal initiative and interpersonal influence interaction were found to predict supervisor evaluations of job performance (Wihler et al., 2014).

For employees high in interpersonal influence (i.e., 1 SD above Personal Initiative, Political Skill, and Job Performance 25 mean), higher levels of employee-rated personal initiative were associated with higher levels of supervisor-rated job performance (b = .22, p < .05, one-tailed). For employees low in interpersonal influence (i.e., 1 SD below mean), higher levels of employee-rated personal initiative were associated with lower levels of supervisor-rated job performance (b = -.27, p < .05) (Wihler et al., 2014).

The least influential performance indicator for the job-specific measures was "verbal communication skills", which hints at a potential area for development in the internship curriculum. The fact that "verbal communication skills" have less explanation power could mean that, although communication is vital, other job activities may require more problem-solving and practical capabilities. Despite widespread acknowledgement of the importance of interpersonal communication, the subject is not always emphasized in medical training. Over the past 30 years, substantial investments have been made to enhance access to essential health services in developing countries. However, relatively few studies have investigated the quality of the services delivered, and fewer still study the quality of interpersonal communication. The quality-of-care research that has been done shows that health counselling and provider-client communication are consistently weak across countries, regions and health services. Even when providers know what messages to communicate, they do not have the interpersonal skills to communicate them most effectively. They often do not know how to communicate with their patients. Despite widespread acknowledgement of the critical importance of face-to-face communication between client and provider, few rigorous health communication studies exist in developing countries(Lori Diprete Brown et al., 2000).

Given the incidents of violence in healthcare setups reported globally, with miscommunication often being the precipitating factor, numerous studies and training have been conducted to bridge this gap. For instance, workshops have been organized to orient interns towards communication, conflict management, stress management, and prescription writing skills. The objective is to provide training on effective communication and conflict management skills, which are crucial to reducing workplace violence and improving the quality of services offered in the hospital. Despite its many years of professional medical education, the current curriculum lacks standardized training on soft skills.

Therefore, workshops on communication skills and conflict management for young medical professionals are a felt need and have motivated them to implement various soft skills in their place of work (Ghiasee & Sağsan, 2021).

Relationship between Socio-demographic Characteristics and Performance of Clinical Nutrition Interns in Kenya

The results revealed that both socio-demographic characteristics had a significant influence on job-specific performance. In the case of general workplace performance, socio-demographic characteristics had a significant influence on general workplace performance category one but not category two. The study's results indicate that socio-demographic characteristics significantly influence job-specific performance among clinical nutrition interns. This finding aligns with existing literature emphasizing the importance of personal and professional characteristics in determining job performance in healthcare settings (Zhou et al., 2023).

The study further revealed that among socio-demographic characteristics, age and marital status were the most significant factors. These findings are consistent with a survey that was conducted in Nigeria on Demographic characteristics and worker performance in public service that stated that the age of an employee in public service is associated with the workers' performance; as workers advance in age, their organs and mental abilities tend to wear out, less effective as they grow older and that age and marital status can influence job performance due to their effects on work-life balance and experiences (Omori et al., 2019). Similarly, a study on "The effect of demographic factors on employees' performance: A case of an owner-manager manufacturing firm". Indicated that age and education influence employees' performance" was supported and that changes in these variables will have an effect on employees' performance. However, "demographic factors sex, department, and tenure influence employees' performance" were

not supported, and changes in this variable will not affect employees' performance (Amegayibor, 2021).

Again, it was found that both males and females trained on the same job performed alike; consequently, if males and females were given equal opportunities on any tasks performed in the public service, there was bound to be a progressive improvement as both delivered as same. Additionally, the study indicated that marital status significantly influenced workers' performance in public service (Omori et al., 2019). As per other similar studies, a finding done by "Mann-Whitney"-U non-parametric test results demonstrated that there was a significant difference in married and unmarried employees' job performance based on the result of unmarried employees, mean =24.82 and married employees mean = 120.02, Hafeez et al (2020). Which also interferes with the study findings. In concurrence with this outcome, another study on performance and marital status in Sindh, Pakistan, showed the independent variable contribution, the beta value in males and females is 75% and 87.20%, respectively, with a P value of .000. The results reflected a positive impact of marital status on job performance of the employee (Memon et al., 2022).

In the analysis of general workplace performance category two, the results indicated that socio-demographic characteristics did not significantly influence the performance of clinical nutrition interns, contrary to the studies above (Aditi Kesari & Julia Y.Noel, 2023; Memon et al., 2022; Hafeez et al., 2020; O'Donovan et al., 2022; Omori et al., 2019; Wijayanti & Titi Sari, 2023; Zhou et al., 2023). However, while socio-demographic characteristics such as age, gender, education level, and socioeconomic status may be presumed to influence work performance, empirical findings have been inconsistent. Omori's study showed that age does not predict employees' affective commitment, but it predicts turnover intent and biological sex did not also predict affective

commitment and turnover (Omori et al., 2019). Another study also supports whereby it looked at: In What Circumstances Does Job Performance Vary with Ages? Also, rated job performance is shown to be generally unrelated to age(Steven H.Appelbaum et al., 2016) hence, there is no doubt that such an occurrence may happen as in the case of this study. Complexities of job-specific performance in clinical nutrition may explain the lack of significance in the relationship between competency and job-specific performance. This contradicts the importance of comprehensive training programs addressing various competencies to improve performance (Andersen et al., 2018).

CONCLUSION

Based on the Specific study objectives, the following empirical conclusions were made;

- The Socio-demographic characteristics of interns constituted age, gender, marital status and religion. The descriptive results revealed that the majority were significantly female and single. The most common religion was Christianity.

- The study focused on two domains of performance: General Workplace performance and Job-specific performance. The results isolated two categories of General Workplace performance. Category one was predominantly made up of intrinsic traits, having met the ideal threshold of 0.7 communality cut-off and included "attitude", "acceptance of criticism", "Asking appropriate questions", "self-motivation" and "practices ethical behaviour" and among them "attitude" and "self-motivation" emerged as the best measures. However, it was noted that punctuality (extrinsic) also met the threshold but trailed inferior to the intrinsic traits. The other extrinsic traits were ruled out. In category two, all the measures did not meet the ideal threshold of 0.7, being ruled out. For the Job-specific performance, the results indicated a strong

coherence among the eight measures in evaluating job-specific abilities, bringing out a single pattern of performance with a single factor unity accounting for 61.83%; however, "technical skills" and "taking the initiative to get a job done", dominating are the only ones that met the ideal threshold of 0.7, hence dominating the Job-specific performance. The clinical nutrition interns focused more on their technical skills and urge to get results.

- Further analysis was executed to establish the relationship of socio-demographic characteristics in the two performance domains. The results revealed that socio-demographic characteristics had a significant influence on job-specific performance. Hence rejecting to accept the null hypothesis. In the case of general workplace performance, socio-demographic characteristics had a significant influence on General workplace performance category one but not category two.

- A further analysis to determine which specific socio-demographic indicator had a significant influence revealed that only two measures had significantly influenced performance: "age" and "marital status". Other measures were not significant.

ABBREVIATIONS

GWP - General workplace performance

JSP - Job Specific Performance

KNDI - Kenya Nutritionists and Dieticians Institute

KUERC - Kenyatta University Ethical Review Committee

NACOSTI - National Council of Science, Technology and Innovation

NCP - Nutrition Care Process

DECLARATIONS

Consent for Publication

Not applicable.

Availability of data and materials

Data is available upon request from the corresponding author

Competing Interest

The authors declare that they have no competing interests

Authors Contributions

UK, CA & DO contributed significantly to the conception and design, data collection, analysis, and interpretation; participated in the writing of the article or critically revised it for important intellectual content; agreed to submit it to the current journal; gave final approval of the version to be published; and agreed to be responsible for all aspects of the work.

REFERENCES

Aditi Kesari, & Julia Y.Noel. (2023). Nutrition Assessment. *A Service of the National Library of Medicine, National Institute of Health*.

Alexandra Beauregard, T. (2007). Family influences on the career life cycle. In *Career Choice in Management and Entrepreneurship: A Research Companion* (pp. 101–126). Edward Elgar Publishing Ltd. https://doi.org/10.4337/9781847208828.00011

Amegayibor, G. K. (2021). The effect of demographic factors on employees' performance: A case of an owner-manager manufacturing firm. *Annals of Human Resource Management Research*, *1*(2), 127–143. https://doi.org/10.35912/ahrmr.v1i2.853

Andersen, D., Baird, S., Bates, T., Chapel, D. L., Cline, A. D., Ganesh, S. N., Garner, M., Grant, B. L., Hamilton, K. K., Jablonski, K., Jones, S. L., Kazaks, A. G., Konek, S. H., Leonard, K. K., McAdam, K. G., Ogata, B. N., Onuoha, E. M., Robinson, G. Y., Schmidt, D. W., … McCauley, S. M. (2018). Academy of Nutrition and Dietetics: Revised 2017 Standards of Practice in Nutrition Care and Standards of Professional Performance for Registered Dietitian Nutritionists. *Journal of the Academy of Nutrition and Dietetics*, *118*(1), 132-140.e15. https://doi.org/10.1016/j.jand.2017.10.003

Çetin, F., & Aşkun, D. (2018). The effect of occupational self-efficacy on work performance through intrinsic work motivation. *Management Research Review*, *41*(2), 186–201. https://doi.org/10.1108/MRR-03-2017-0062

Chourasiya, A., & Agrawal, V. (2019). *A Comparative Analysis of Age Based Career Stage Models Needs and Characteristics at Various Career Stages* (Vol. 6). http://ijrar.com/

Crispin, N., Wamae, A., Ndirangu, M., Wamalwa, D., Wangalwa, G., Watako, P., & Mbiti, E. (2012). Effects of selected socio-demographic characteristics of community health workers on performance of home visits during pregnancy: a cross-sectional study in Busia District, Kenya. *Global Journal of Health Science*, *4*(5), 78–90. https://doi.org/10.5539/gjhs.v4n5p78

Eaton, P., Frank, B., Johnson, K., & Willoughby, S. (2019). Comparing exploratory factor models of the Brief Electricity and Magnetism Assessment and the Conceptual Survey of Electricity and Magnetism. *Physical Review Physics Education Research*, *15*(2). https://doi.org/10.1103/PhysRevPhysEducRes.15.020133

Faiq Gul Memon, Syed Muneer Ahmed Shah, Nazar Hussain, Faiza Memon, & Saifullah Memeon. (2022). Performance and Marital Status: A Study on Employees of Public Sector Universities of Sindh Pakistan. *Journal of Peace, Development and Communication (JPDC)*, *6*(2), 486–503.

Galbraith, D., Mondal, S., & Rock, S. (2018). *The Potential Power of Internships and the Impact on Career Preparation*. http://www.aabri.com/copyright.html

Ghiasee, A., & Sağsan, M. (2021). The relationship between violent behavior in healthcare settings and communication skills: An empirical study on provincial hospitals in Ankara. *Anadolu Psikiyatri Dergisi*, *22*(2), 106–112. https://doi.org/10.5455/apd.83748

Goedereis, E. A., Mehta, C. M., Jones, J., & Ayotte, B. J. (2023). "I want to focus on something that I feel really good about every day": Career development in established adulthood. *Acta Psychologica*, *234*, 103863. https://doi.org/10.1016/J.ACTPSY.2023.103863

Hafeez, M., Aslam -a, W., Hafeez -ab, M., -b, A., Ahmad -b, A., Ud Din -c, M., & Khan -b, M. (2020). Evaluating the Impact of Marital Status on Employees' Job Performance: Moderating Role of Hired Hand's Gender. *International Journal of Advanced Science and Technology*,

29(11s), 1699– 1706. https://www.researchgate.net/publication/342095204

Henning, M. A., Krägeloh, C., Thompson, A., Sisley, R., Doherty, I., & Hawken, S. J. (2015). Religious Affiliation, Quality of Life and Academic Performance: New Zealand Medical Students. *Journal of Religion and Health*, *54*(1), 3–19. https://doi.org/10.1007/s10943-013-9769-z

Lohela-Karlsson, M., Jensen, I., & Björklund, C. (2022). Do Attitudes towards Work or Work Motivation Affect Productivity Loss among Academic Employees? *International Journal of Environmental Research and Public Health*, *19*(2). https://doi.org/10.3390/ijerph19020934

Lori Diprete Brown, Berengere De Negri, Orlando Hernandez, Lilian Dominguez, Julie H. Sanchack, & Debra Roter. (2000). An evaluation of the impact of training Honduran health care providers in interpersonal communication. *International Journal for Quality in Health Care*, *6*, 495–501.

Miranda, S. R. (2019). Preferred leadership styles by gender. *Journal of Management Development*, *38*(7), 604–615. https://doi.org/10.1108/JMD-01-2019-0034

Monica, O. M. (2017). *Factors Influencing Performance Of Nutritionists In Teaching And Referral Hospitals, Kenya A Thesis Submitted In Partial Fulfillment Of The Requirements For The Degree Of Master Of Science In Community Nutrition And Development Department Of Nutrition And Health Maseno University*.

Naidu, A. (2009). Factors affecting patient satisfaction and healthcare quality. *International Journal of Health Care Quality Assurance*, *22*(4), 366–381. https://doi.org/10.1108/09526860910964834

Nida, B., & Abu Jbara, A. (2016). *Performance Measurement Indicators In The Healthcare Industry: A Systematic Review*. https://shareok.org/bitstream/handle/11244/44888/Performance%20Measurement%20Indicators%20in%20Healthcare%20Thesis%20-%20Nidaa%20Abu%20Jbara%20Final%20Aug%208%202016.pdf?sequence=2&isAllowed=y

O'Donovan, S., Palermo, C., & Ryan, L. (2022). Competency-based assessment in nutrition education: A systematic literature review. In *Journal of Human Nutrition and Dietetics* (Vol. 35, Issue 1, pp. 102–111). John Wiley and Sons Inc. https://doi.org/10.1111/jhn.12946

Omori, A., Bassey, P. U., Omori, A. E., & Bassey, P. U. (2019). Demographic Characteristics and Workers' Performance in Public Service in Nigeria. In *International Journal of Research and Innovation in Social Science (IJRISS) /Volume III: Vol. II*. www.rsisinternational.org

Shockley, K. M., & Allen, T. D. (2007). When flexibility helps: Another look at the availability of flexible work arrangements and work-family conflict. *Journal of Vocational Behavior*, *71*(3), 479–493. https://doi.org/10.1016/J.JVB.2007.08.006

Smythe, J. A., Schumacher, J. R., Cullen, R. W., & Ma, Y. J. (2015). Send Orders for Reprints to reprints@benthamscience.ae Personal Attributes of Successful Interns as Perceived by Dietetic Internship Directors and Preceptors from Varying Generations. In *The Open Nutrition Journal* (Vol. 9). www.eatright.org

Steege, R., Taegtmeyer, M., McCollum, R., Hawkins, K., Ormel, H., Kok, M., Rashid, S., Otiso, L., Sidat, M., Chikaphupha, K., Datiko, D. G., Ahmed, R., Tolhurst, R., Gomez, W., & Theobald, S. (2018). How do gender relations affect the working lives of close-to-community health service providers? Empirical research, a

review and conceptual framework. *Social Science and Medicine*, *209*, 1–13. https://doi.org/10.1016/j.socscimed.2018.05.00 2

Steven H.Appelbaum, Richard Wenger, Carolina Pachon Buitrago, & Ravneet Kaur. (2016). The effects of old-age stereotypes on organizational productivity. *Industrial and Commercial Training*, *5*.

The Nutritionists and Dieticians Act No. 18 of 2007 – Cap253b. (2019). *The Nutritionists And Dieticians Act No. 18 of 2007 (2019)*. www.kenyalaw.org

Turesky, M., & Warner, M. E. (2020). Gender Dynamics in the Planning Workplace: The Importance of Women in Management. *Journal of the American Planning Association*, *86*(2), 157– 170. https://doi.org/10.1080/01944363.20 19.1691041

Wang, X., & Cheng, Z. (2020). Cross-Sectional Studies: Strengths, Weaknesses, and Recommendations. *Chest*, *158*(1), S65–S71. https://doi.org/10.1016/J.CHEST.2020.03.012

Wihler, A., Blickle, G., Ellen, B. P., Hochwarter, W. A., & Ferris, G. R. (2014). Personal Initiative and Job Performance Evaluations: Role of Political Skill in Opportunity Recognition and Capitalization. *Journal of Management*, *43*(5), 1388–1420. https://doi.org/10.1177/0149206314552451

Wijayanti, F., & Titi Sari, R. (2023). The Influence Of Competency On Employee Performance: (A Literature Review). In *Management, Economics and Social Sciences. IJAMESC, PT. ZillZell Media Prima* (Vol. 1, Issue 6).

Willoughby, B. J., Hall, S. S., & Luczak, H. P. (2015). Marital Paradigms: A Conceptual Framework for Marital Attitudes, Values, and Beliefs. *Journal of Family Issues*, *36*(2), 188–

211. https://doi.org/10.1177/0192513X134876 77

Zhou, X., Zhang, Y., Wang, Y., Wang, H., Sun, S., & Huang, X. (2023). The impact of medical staff's character strengths on job performance in Hangzhou hospitals. *Frontiers in Psychology*, *14*. https://doi.org/10.3389/fpsyg. 2023.1291851