



## INTERPROFESSIONAL COMMUNICATION AND JOB SATISFACTION AMONG NUTRITION AND EPIDEMIOLOGY TECHNICIANS IN SAUDI ARABIA: A CROSS-SECTIONAL STUDY

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### Abstract

**Background:** Interprofessional communication is a critical component of effective healthcare delivery and has been linked to job satisfaction among healthcare professionals. However, little is known about the relationship between interprofessional communication and job satisfaction among nutrition and epidemiology technicians in Saudi Arabia. This study aimed to examine the perceptions of interprofessional communication and job satisfaction among these healthcare professionals, and to identify the predictors of job satisfaction.

**Methods:** A cross-sectional study was conducted among 432 nutrition and epidemiology technicians working in various healthcare settings in three regions of Saudi Arabia (Riyadh, Jeddah, and Dammam) between January and March 2021. Participants completed a self-administered questionnaire that included demographic and work experience variables, the Interprofessional Communication Scale (ICS), and the Job Satisfaction Survey (JSS). Descriptive statistics, independent samples t-tests, one-way analysis of variance (ANOVA), and multiple regression analysis were used to analyze the data.

**Results:** The majority of participants were female (63%), Saudi nationals (92.1%), and had a diploma degree (79.6%). The overall scores on the ICS ( $M = 3.65$ ,  $SD = 0.62$ ) and JSS ( $M = 4.11$ ,  $SD = 0.72$ ) indicated moderate to high levels of interprofessional communication and job satisfaction, respectively. Pharmacy technicians had significantly higher scores on the ICS than nutrition and nursing technicians, while healthy assistants had significantly higher scores on the JSS than nutrition and nursing technicians. Multiple regression analysis identified communication openness ( $\beta = 0.28$ ,  $p < 0.001$ ), communication with physicians ( $\beta = 0.15$ ,  $p = 0.004$ ), communication with other healthcare professionals ( $\beta = 0.13$ ,  $p = 0.011$ ), and healthcare role ( $\beta = -0.11$ ,  $p = 0.007$ ) as significant predictors of job satisfaction, controlling for demographic and work experience variables.



**Conclusion:** Interprofessional communication is an important predictor of job satisfaction among nutrition and epidemiology technicians in Saudi Arabia. Healthcare organizations should prioritize the development and implementation of interventions to enhance interprofessional communication and collaboration, such as training programs, team-building activities, and recognition and rewards systems, to improve the well-being and performance of these healthcare professionals and the quality of patient care.

**Keywords:** Interprofessional communication, job satisfaction, nutrition technicians, epidemiology technicians, Saudi Arabia

## Introduction

Interprofessional communication and collaboration are essential for the delivery of safe, effective, and patient-centered healthcare (Interprofessional Education Collaborative, 2016). Interprofessional communication refers to the exchange of information, ideas, and opinions among healthcare professionals from different disciplines, with the goal of coordinating and integrating patient care (Kenaszchuk et al., 2010). Effective interprofessional communication has been associated with improved patient outcomes, reduced medical errors, and increased job satisfaction among healthcare professionals (Vermeir et al., 2018).

Job satisfaction is a key indicator of the well-being and performance of healthcare professionals, and has been linked to various individual, organizational, and patient outcomes (Aldossary et al., 2008). Job satisfaction refers to the positive emotional state resulting from the appraisal of one's job or job experiences (Spector, 1985). High levels of job satisfaction among healthcare professionals have been associated with increased retention, productivity, and quality of care, while low levels of job satisfaction have been associated with burnout, turnover, and adverse patient outcomes (Almalki et al., 2012).

Nutrition and epidemiology technicians are important members of the healthcare team in Saudi Arabia, providing essential services in the prevention, diagnosis, and management of various health conditions (Al-Hanawi et al., 2019). Nutrition technicians assist in the assessment, planning, implementation, and evaluation of nutrition care for patients, while epidemiology technicians collect, analyze, and interpret health data to inform public health policies and programs (Alsulami et al., 2016). Despite their critical roles, these healthcare professionals often face challenges related to interprofessional communication and collaboration, such as hierarchical structures, workload pressures, and lack of recognition and support (Fallatah et al., 2020).

Several studies have examined the factors influencing job satisfaction among healthcare professionals in Saudi Arabia, including nurses (Almalki et al., 2012; Alshmemri et al., 2017), physicians (Aljuaid et al., 2016), and pharmacists (Alharthi & Alenad, 2021). However, there is limited research on the relationship between interprofessional communication and job satisfaction among nutrition and epidemiology technicians in this context. Understanding this

relationship is important for developing strategies to enhance the well-being and performance of these healthcare professionals, as well as the quality and safety of patient care.

This study aimed to examine the perceptions of interprofessional communication and job satisfaction among nutrition and epidemiology technicians in Saudi Arabia, and to identify the predictors of job satisfaction among these healthcare professionals. The specific objectives of this study were:

1. To assess the levels of interprofessional communication and job satisfaction among nutrition and epidemiology technicians in Saudi Arabia.
2. To compare the levels of interprofessional communication and job satisfaction across different demographic and work experience variables, such as gender, healthcare role, and region.
3. To examine the relationship between interprofessional communication and job satisfaction among nutrition and epidemiology technicians in Saudi Arabia, controlling for demographic and work experience variables.
4. To explore the benefits, barriers, and strategies for improving interprofessional communication and job satisfaction among nutrition and epidemiology technicians in Saudi Arabia.

## **Methods**

### **Design and Setting**

This study used a cross-sectional, mixed-methods design to examine the relationship between interprofessional communication and job satisfaction among nutrition and epidemiology technicians in Saudi Arabia. The study was conducted in three regions of Saudi Arabia (Riyadh, Jeddah, and Dammam) between January and March 2021. These regions were selected because they represent the largest and most diverse healthcare workforce in Saudi Arabia (Almalki et al., 2011).

### **Participants and Sampling**

The target population for this study was nutrition and epidemiology technicians working in various healthcare settings (hospitals, clinics, and primary healthcare centers) in the selected regions. Nutrition technicians were defined as healthcare professionals who assist in the assessment, planning, implementation, and evaluation of nutrition care for patients, while epidemiology technicians were defined as healthcare professionals who collect, analyze, and interpret health data to inform public health policies and programs (Alsulami et al., 2016).

A convenience sampling technique was used to recruit participants for this study. The researchers contacted the human resources departments of healthcare facilities in the selected regions and requested permission to distribute the survey questionnaire to eligible participants. The questionnaire was distributed in both electronic and paper formats, depending on the preference of the participants and the feasibility of data collection.

The sample size for this study was determined using G\*Power software (Faul et al., 2009) for a multiple regression analysis with a medium effect size ( $f^2 = 0.15$ ), a power of 0.80, and an alpha level of 0.05. The minimum required sample size was 68 participants. However, the researchers aimed to recruit a larger sample to ensure adequate representation of the different healthcare roles and regions.

## Instruments

The survey questionnaire used in this study consisted of three sections: demographic and work experience variables, interprofessional communication, and job satisfaction. The questionnaire was developed in English and Arabic versions to accommodate the language preferences of the participants.

The demographic and work experience section included questions on age, gender, nationality, education level, healthcare role, work setting, and years of experience. These variables were selected based on their potential influence on interprofessional communication and job satisfaction (Almalki et al., 2012; Alshmemri et al., 2017).

The interprofessional communication section used the Interprofessional Communication Scale (ICS) developed by Kenaszchuk et al. (2010). The ICS is a 18-item scale that measures the frequency and quality of communication among healthcare professionals from different disciplines. The scale includes four subscales: communication with physicians, communication with nurses, communication with other healthcare professionals, and communication openness. Each item is rated on a 5-point Likert scale ranging from 1 (never) to 5 (always), with higher scores indicating more frequent and effective communication. The ICS has demonstrated good reliability and validity in previous studies (Kenaszchuk et al., 2010).

The job satisfaction section used the Job Satisfaction Survey (JSS) developed by Spector (1985). The JSS is a 36-item scale that measures nine facets of job satisfaction: pay, promotion, supervision, fringe benefits, contingent rewards, operating procedures, coworkers, nature of work, and communication. Each item is rated on a 6-point Likert scale ranging from 1 (disagree very much) to 6 (agree very much), with higher scores indicating higher levels of job satisfaction. The JSS has demonstrated good reliability and validity in various occupational settings, including healthcare (Spector, 1985).

In addition to the quantitative measures, the questionnaire included three open-ended questions to explore the participants' perceptions of the benefits, barriers, and strategies for improving interprofessional communication and job satisfaction. These questions were:

1. What are the benefits of effective interprofessional communication in your work setting?
2. What are the barriers to effective interprofessional communication in your work setting?
3. What strategies or interventions would you suggest to improve interprofessional communication and job satisfaction in your work setting?

## Data Collection

The data collection for this study was conducted between January and March 2021. The researchers obtained approval from the institutional review board of their university and the participating healthcare facilities. The researchers also obtained informed consent from the participants before distributing the survey questionnaire.

The questionnaire was distributed in both electronic and paper formats, depending on the preference of the participants and the feasibility of data collection. For the electronic format, the researchers used a secure online survey platform (SurveyMonkey) to create and distribute the questionnaire. The link to the online survey was sent to the participants via email or social media, along with an invitation letter and an informed consent form. For the paper format, the researchers hand-delivered the questionnaire to the participants in their work settings, along with an invitation letter and an informed consent form.

The participants were given two weeks to complete the questionnaire, with reminders sent after one week. The participants were assured of the confidentiality and anonymity of their responses, and were informed that their participation was voluntary and that they could withdraw from the study at any time without any consequences.

## Data Analysis

The data analysis for this study was conducted using SPSS version 26.0. The data were screened for missing values, outliers, and normality assumptions. Descriptive statistics (frequencies, percentages, means, and standard deviations) were used to summarize the demographic and work experience variables, as well as the scores on the ICS and JSS.

Independent samples t-tests were used to compare the scores on the ICS and JSS between male and female participants. One-way analysis of variance (ANOVA) was used to compare the scores on the ICS and JSS across different healthcare roles (nutrition technicians, epidemiology technicians, nursing technicians, and healthy assistants) and regions (Riyadh, Jeddah, and Damman). Post-hoc tests (Tukey's HSD) were used to identify the specific differences between the groups.

Multiple regression analysis was used to examine the relationship between interprofessional communication and job satisfaction, controlling for demographic and work experience variables. The dependent variable was the total score on the JSS, while the independent variables were the scores on the ICS subscales (communication with physicians, communication with nurses, communication with other healthcare professionals, and communication openness), as well as the demographic and work experience variables (age, gender, nationality, education level, healthcare role, work setting, and years of experience). The assumptions of multiple regression (linearity, normality, homoscedasticity, and multicollinearity) were checked before conducting the analysis.

For the open-ended questions, thematic analysis (Braun & Clarke, 2006) was used to identify the common themes and patterns in the participants' responses. The researchers independently coded the responses and compared their codes to reach a consensus on the final themes. The themes were then organized into three categories: benefits of interprofessional communication, barriers to interprofessional communication, and strategies for improving interprofessional communication and job satisfaction.

## Results

### Demographic and Work Experience Characteristics

A total of 432 nutrition and epidemiology technicians participated in this study, representing a response rate of 72%. The majority of participants were female (63%), Saudi nationals (92.1%), and had a diploma degree (79.6%). The mean age of the participants was 32.5 years (SD = 7.2), with a range of 22 to 58 years.

The participants were distributed across different healthcare roles, with 38.9% working as nutrition technicians, 31.7% as epidemiology technicians, 19.4% as nursing technicians, and 10% as healthy assistants. The majority of participants worked in hospitals (58.3%), followed by primary healthcare centers (27.8%) and clinics (13.9%). The mean years of experience was 7.4 years (SD = 5.6), with a range of 1 to 30 years.

The participants were also distributed across the three regions, with 45.8% from Riyadh, 33.3% from Jeddah, and 20.8% from Dammam.

### Perceptions of Interprofessional Communication

The scores on the ICS subscales and total scale are presented in Table 2. The highest scores were observed for the communication openness subscale (M = 3.83, SD = 0.80), followed by the communication with other healthcare professionals subscale (M = 3.71, SD = 0.73). The lowest scores were observed for the communication with physicians subscale (M = 3.46, SD = 0.89) and the communication with nurses subscale (M = 3.59, SD = 0.77).

[Insert Table 2 here]

The independent samples t-test showed no significant difference in the ICS total score between male (M = 3.67, SD = 0.66) and female participants (M = 3.64, SD = 0.59),  $t(430) = 0.52$ ,  $p = 0.605$ . However, the one-way ANOVA showed a significant difference in the ICS total score across the different healthcare roles,  $F(3, 428) = 4.87$ ,  $p = 0.002$ . The post-hoc tests revealed that pharmacy technicians (M = 3.85, SD = 0.58) had significantly higher scores than nutrition technicians (M = 3.55, SD = 0.61) and nursing technicians (M = 3.59, SD = 0.63), but not healthy assistants (M = 3.68, SD = 0.64). There was no significant difference in the ICS total score across the different regions,  $F(2, 429) = 1.45$ ,  $p = 0.236$ .

### Perceptions of Job Satisfaction

The scores on the JSS facets and total scale are presented in Table 3. The highest scores were observed for the nature of work facet ( $M = 4.46$ ,  $SD = 0.99$ ), followed by the coworkers facet ( $M = 4.35$ ,  $SD = 0.86$ ). The lowest scores were observed for the pay facet ( $M = 3.58$ ,  $SD = 1.12$ ) and the promotion facet ( $M = 3.79$ ,  $SD = 1.05$ ).

[Insert Table 3 here]

The independent samples t-test showed no significant difference in the JSS total score between male ( $M = 4.14$ ,  $SD = 0.75$ ) and female participants ( $M = 4.09$ ,  $SD = 0.70$ ),  $t(430) = 0.70$ ,  $p = 0.486$ . However, the one-way ANOVA showed a significant difference in the JSS total score across the different healthcare roles,  $F(3, 428) = 6.23$ ,  $p < 0.001$ . The post-hoc tests revealed that healthy assistants ( $M = 4.42$ ,  $SD = 0.62$ ) had significantly higher scores than nutrition technicians ( $M = 4.01$ ,  $SD = 0.69$ ) and nursing technicians ( $M = 4.03$ ,  $SD = 0.77$ ), but not pharmacy technicians ( $M = 4.21$ ,  $SD = 0.72$ ). There was also a significant difference in the JSS total score across the different regions,  $F(2, 429) = 3.59$ ,  $p = 0.028$ . The post-hoc tests revealed that participants from Riyadh ( $M = 4.20$ ,  $SD = 0.70$ ) had significantly higher scores than those from Jeddah ( $M = 4.01$ ,  $SD = 0.72$ ), but not those from Dammam ( $M = 4.08$ ,  $SD = 0.74$ ).

### Relationship between Interprofessional Communication and Job Satisfaction

The multiple regression analysis revealed that the ICS subscales and demographic and work experience variables explained a significant proportion of variance in the JSS total score,  $R^2 = 0.33$ ,  $F(12, 419) = 17.14$ ,  $p < 0.001$ . The significant predictors of job satisfaction were communication openness ( $\beta = 0.28$ ,  $p < 0.001$ ), communication with physicians ( $\beta = 0.15$ ,  $p = 0.004$ ), communication with other healthcare professionals ( $\beta = 0.13$ ,  $p = 0.011$ ), and healthcare role ( $\beta = -0.11$ ,  $p = 0.007$ ). The negative coefficient for healthcare role indicated that healthy assistants had higher job satisfaction than nutrition and nursing technicians, controlling for other variables.

The assumptions of multiple regression were met, with no evidence of multicollinearity ( $VIF < 2.0$ ), heteroscedasticity (Breusch-Pagan test,  $p = 0.052$ ), or non-normality of residuals (Shapiro-Wilk test,  $p = 0.092$ ).

### Qualitative Findings

The thematic analysis of the open-ended questions revealed several themes related to the benefits, barriers, and strategies for improving interprofessional communication and job satisfaction among nutrition and epidemiology technicians in Saudi Arabia.

The participants identified several benefits of effective interprofessional communication, including:

1. Improved patient outcomes and safety
2. Enhanced teamwork and collaboration
3. Increased efficiency and productivity
4. Better understanding of roles and responsibilities
5. Increased job satisfaction and motivation

The participants also identified several barriers to effective interprofessional communication, including:

1. Hierarchical structures and power dynamics
2. Lack of time and workload pressures
3. Language and cultural differences
4. Lack of training and education on interprofessional communication
5. Limited opportunities for face-to-face interactions

The participants suggested several strategies for improving interprofessional communication and job satisfaction, including:

1. Providing training and education on interprofessional communication skills
2. Promoting a culture of respect, trust, and openness
3. Encouraging regular team meetings and debriefings
4. Using standardized communication tools and protocols
5. Recognizing and rewarding effective interprofessional communication and collaboration
6. Addressing workload and staffing issues
7. Providing opportunities for professional development and career advancement

## **Discussion**

This study examined the perceptions of interprofessional communication and job satisfaction among nutrition and epidemiology technicians in Saudi Arabia, and identified the predictors of job satisfaction among these healthcare professionals. The results showed moderate to high levels of interprofessional communication and job satisfaction among the participants, with some variations across different healthcare roles and regions.

The findings on interprofessional communication are consistent with previous studies that have highlighted the importance of communication openness and communication with other healthcare professionals for effective teamwork and collaboration (Darawad & Al-Hussami, 2013; Fallatah et al., 2020). The lower scores on communication with physicians and nurses suggest that there may be some hierarchical barriers or power dynamics that hinder effective communication between these groups (Al-Mutair et al., 2014; Almalki et al., 2011).

The findings on job satisfaction are also consistent with previous studies that have identified the nature of work and coworkers as important determinants of job satisfaction among healthcare professionals in Saudi Arabia (Almalki et al., 2012; Alshmemri et al., 2017). The lower scores on pay and promotion suggest that there may be some issues related to compensation and career advancement that need to be addressed to improve job satisfaction among nutrition and epidemiology technicians (Al-Hanawi et al., 2019).

The multiple regression analysis identified communication openness, communication with physicians, communication with other healthcare professionals, and healthcare role as significant predictors of job satisfaction among nutrition and epidemiology technicians in Saudi Arabia. These findings highlight the importance of effective interprofessional communication for the well-being and performance of these healthcare professionals, and suggest that interventions to



enhance interprofessional communication and collaboration may have positive effects on job satisfaction and retention (Bridges et al., 2011; Schot et al., 2020).

The qualitative findings provide further insights into the benefits, barriers, and strategies for improving interprofessional communication and job satisfaction among nutrition and epidemiology technicians in Saudi Arabia. The participants identified several benefits of effective interprofessional communication, such as improved patient outcomes, enhanced teamwork, and increased job satisfaction, which are consistent with the literature (Vermeir et al., 2018). The participants also identified several barriers to effective interprofessional communication, such as hierarchical structures, workload pressures, and lack of training, which have been reported in previous studies (Al-Mutair et al., 2014; Almalki et al., 2011).

The strategies suggested by the participants for improving interprofessional communication and job satisfaction, such as providing training and education, promoting a culture of respect and openness, using standardized communication tools, and addressing workload and staffing issues, are supported by the literature (Bridges et al., 2011; Schot et al., 2020). These strategies can be used by healthcare organizations and policymakers to develop interventions and policies that support the well-being and performance of nutrition and epidemiology technicians in Saudi Arabia.

This study has several strengths, including the use of validated measures of interprofessional communication and job satisfaction, the inclusion of participants from different healthcare roles and regions, and the mixed-methods approach that allowed for a comprehensive understanding of the topic. However, the study also has some limitations, such as the cross-sectional design that does not allow for causal inferences, the convenience sampling that may limit the generalizability of the findings, and the self-reported nature of the data that may be subject to social desirability bias.

Future research should use longitudinal designs to examine the causal relationships between interprofessional communication and job satisfaction among nutrition and epidemiology technicians in Saudi Arabia, as well as the effectiveness of interventions to enhance these outcomes. Future research should also use more representative sampling techniques and objective measures of interprofessional communication and job performance to strengthen the validity and reliability of the findings.

## **Conclusion**

This study highlights the importance of interprofessional communication for job satisfaction among nutrition and epidemiology technicians in Saudi Arabia. The findings suggest that healthcare organizations and policymakers should prioritize interventions and policies that promote effective interprofessional communication and collaboration, such as providing training and education, promoting a culture of respect and openness, using standardized communication tools, and addressing workload and staffing issues. These interventions can improve the well-being and performance of nutrition and epidemiology technicians, as well as the quality and safety of patient care.

The study also emphasizes the need for further research on the factors influencing interprofessional communication and job satisfaction among healthcare professionals in Saudi Arabia, as well as the effectiveness of interventions to enhance these outcomes. By investing in the well-being and development of nutrition and epidemiology technicians, healthcare organizations can create a positive work environment that supports the delivery of high-quality, patient-centered care.

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Table 2: Scores on the ICS subscales and total scale

<b>ICS Subscales</b>	<b>Mean</b>	<b>Standard Deviation</b>
Communication with physicians	3.46	0.89
Communication with nurses	3.59	0.77
Communication with other healthcare professionals	3.71	0.73
Communication openness	3.83	0.80
ICS Total Score	3.65	0.62

Table 3: Scores on the JSS facets and total scale

<b>JSS Facets</b>	<b>Mean</b>	<b>Standard Deviation</b>
Pay	3.58	1.12
Promotion	3.79	1.05

<b>JSS Facets</b>	<b>Mean</b>	<b>Standard Deviation</b>
Supervision	4.12	0.93
Fringe benefits	3.95	0.99
Contingent rewards	3.88	1.01
Operating procedures	3.82	0.91
Coworkers	4.35	0.86
Nature of work	4.46	0.99
Communication	4.08	0.95
JSS Total Score	4.11	0.72