

# Factors of Effective Internal Audits for Patient Safety in Primary Health Care Centers of Taif, Saudi Arabia

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## Keywords

Internal audit · Patient safety · Health care · Effectiveness · Saudi Arabia

## Abstract

**Introduction:** Internal audit is one of the tools to ensure safety in patient care. Literature on the internal audit effectiveness (IAE) in patient safety is scarce in Saudi Arabia. This study therefore aimed to assess the factors which influence the IAE in patient safety. **Methods:** A cross-sectional study was conducted among primary healthcare centers' general directors and medical directors in Taif, Saudi Arabia. Data were collected using a validated structured questionnaire in Arabic and English. The questionnaire besides sociodemographics characteristics collected data on support of management, interdepartmental coordination, independence, objectivity, competence, and IAE. Analysis was done on SPSS version 26.0. Pearson correlation was used to see the relationship between factors and the IAE in patient safety. **Results:** A total of 94 participants were included in the analysis. The mean scores in each of the domains on a scale of 5 were; support of management 4.04, interdepartmental coordination 3.95, independence 4.03, objectivity 4.20, and competence 4.46, while for the IAE the mean score was 4.36. Correlation analyses found that the IAE was significantly associated with all five factors. All the

factors had moderate association except for objectivity which had a weak correlation with IAE. **Conclusions:** Overall, there were satisfactory scores for the factors which affect IAE with room for further improvement. All the factors studied were positively associated with the IAE, indicating a need for healthcare organizations to consider these factors while planning internal audit activities. Further research on large scale is required to provide robust and generalizable results.

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## Introduction

Patient safety is one of the major concerns that healthcare institutions face globally. Joint commission international has developed international patient safety goals [1]. These goals have been adopted by healthcare institutions globally to ensure quality care and improve patient outcomes. These goals provide standards to healthcare institutions for providing safe and effective care to patients.

Several strategies have been implemented to facilitate evidence-based practice [2]; however, these are not successful always and may be affected by various factors [3]. One of the widely used tools for implementing evidence-based practice in health care is clinical audit [4].

Clinical audit is a systematic process and can be defined as “a quality improvement cycle that involves measurement of the effectiveness of healthcare against agreed and proven standards for high quality and taking action to bring practice in line with these standards to improve the quality of care and health outcomes” [5].

Internal audits are now widely used in the healthcare sector to improve the quality and ensure the safety of the users during the care process. Internal audits can serve as tools for healthcare management improvement [6], governing patient safety [7], assessing emergency preparedness [8], ensuring financial transparency [9], and performance improvement [10]. However, there are variations in the outcome of audits carried out across countries and different institutions within the same countries [11, 12].

There is a wide gap between the potential of audits and the actual gain from these audits [13]. These result from various deficiencies in the systems [14], the use of routinely recorded data without proper consideration of variables [15], time constraints, and lack of clarity of data collection [16].

Many systematic reviews have been conducted which reported a range of facilitators and barriers to effective internal audit. The facilitators reported in the literature are; advanced information systems, training of staff, adequate and dedicated time, organized audit program and clear communication between clients and providers of audits, engagement and ownership of staff, effective feedback system and provision of resources, organizational support, independence, impartiality, cooperation and coordination with audit department, and cultural factors. Barriers on the other hand include insufficient resources, lack of skills to design and implement, poor planning of audit, lack of coordination, resource and time constraints, weak health information system, lack of support, high workload, poor commitment to team building, administrative blockades, and lack of EBM guidelines [17–19]. Literature on the effectiveness of audits and their barriers and facilitators in healthcare settings is scarce in Saudi Arabia. Available studies are done in either the corporate sector or general assessment of the audit systems. These studies reported similar facilitators and barriers as reported from other countries [20–23].

In Saudi Arabia, public and private institutions have internal audit departments to carry out audits to ensure compliance with guidelines and protocols. Ministry of Health, Saudi Arabia, has recently signed a memorandum of understanding with the Saudi Institute of Internal Auditors to enhance the skills and capabilities of internal audit teams in hospitals [24]. Despite all these, the literature on the effectiveness of audits is scarce and limited

to audit reports of specific programs or care components. To the best of our knowledge, no study from Saudi Arabia has been published that assessed the facilitators and barriers to effective audits for patient safety. We, therefore, aimed to measure the perceived levels of factors (support of management, interdepartmental coordination (IC), independence, objectivity, and competencies) and their relationship with the internal audit effectiveness (IAE) for patient safety in public sector primary healthcare facilities of Taif, Saudi Arabia.

## Materials and Methods

### Study Setting

A cross-sectional study was conducted in Taif from March to April 2022 among general and medical directors of primary healthcare centers. Taif is one of the governorates in the Makkah region of Saudi Arabia. It has an estimated population of 688,000 people. Taif is located in the western part of the country and has mountainous terrain. There are 47 primary care centers in Taif.

### Sample Size and Sampling Procedure

Since the study population is limited, all the eligible participants were invited to participate in the study. All the primary healthcare centers of Taif were included in the study. Participants were assessed for eligibility, given information about the study objectives, and invited to participate in the study. All the general managers and medical directors of PHCs who have been working in the current facility for at least 1 year were eligible. Those who had worked either as general manager or medical director previously in the PHCs in the past 2 years for at least 1 year were also eligible to participate. Part-time and locum managers were excluded from the study.

### Data Collection Tool and Procedure

Data were collected using a structured questionnaire which was adapted from previous research covering different factors (domains) affecting the IAE [22, 25–28]. These studies validated tools for different domains included in the current study and found these to be valid and reliable for measuring the respective construct. The questionnaire had two sections. The first section was about the sociodemographic and professional characteristics of the participants which included variables such as; gender, age, qualification, job position, current workplace, and years of experience. The second section had 31 items on a five-point Likert scale (fully disagree = 1, disagree, partially disagree, partially agree, agree, and fully agree = 5). This section was further divided into six domains: support of management (5 items), IC (4 items), independence (8 items), objectivity (3 items), competencies (4 items), and IAE in patient safety (7 items). Due to administrative and logistical limitations, it was not possible to obtain data on various patient safety indicators. Therefore, questions in the last domain of section two assessed the perceived IAE for patient safety of medical and general directors of primary healthcare centers. The questionnaire was translated into Arabic. The validity of the translation was assessed by back translation of the Arabic version into English and then comparing the back-translated version with the original English version. A pilot test was done to assess the

**Table 1.** Distribution of the study population according to their sociodemographic characteristics

Variable	n	%
Gender		
Male	33	35.1
Female	61	64.9
Age, years		
21–25	3	3.2
26–30	16	17.0
31–35	18	19.1
35–40	26	27.7
More than 40	31	33.0
Education		
Diploma	37	39.4
Bachelors	39	41.5
Masters/PhD	18	19.1
Job position		
General director	47	50
Medical director	47	50
Years of experience		
1–5 years	19	20.2
6–10 years	13	13.8
11–15 years	23	24.5
16–20 years	15	16.0
More than 20 years	24	25.5

understandability of the questionnaire on 25 administrative staff in King Faisal Hospital. The data from pilot testing were not included in the final analysis. The internal consistency of the tool was assessed using Cronbach's alpha, and the values were support of management (0.91), IC (0.85), independence (0.93), objectivity (0.72), competencies (0.91), and IAE in patient safety (0.95). The questionnaire was provided to the participant to fill out themselves. The principal investigator was available to explain, should confusion arise while filling out the questionnaire.

#### Data Management and Analysis

Data were entered in MS Excel, and analysis was done using SPSS version 26.0. Descriptive analyses were done to calculate frequencies and percentages for categorical variables. Means and standard deviations were calculated for continuous variables. The agreement levels for each of the 31 items were calculated as mean with standard deviation, out of a maximum score of five. Similarly, the total mean scores of each of the domains were also calculated. The mean scores were also converted into percentages. Differences in the agreements with respect to gender, age groups, education, job position, workplace, and experience were assessed using independent sample *t* test and ANOVA. The Pearson correlation coefficient was also calculated to see the relationship of different factors with the IAE. A *p* value <0.05 was considered statistically significant.

#### Ethical Considerations

This study protocol was reviewed and approved by Research Ethics Committee of Directorate of Health, Taif, Saudi Arabia approval # 695, dated: 12-03-2022. Approval was also sought from

**Table 2.** Scores of factors affecting IAE and perceived IAE

Factor	Mean	SD	% mean
Support of management	4.04	0.77	80.80
IC	3.95	0.75	79.10
Independence	4.03	0.69	80.56
Objectivity	4.20	0.70	84.00
Competencies	4.46	0.57	89.10
Perceived IAE	4.36	0.64	87.20

IC, interdepartmental coordination; IAE, internal audit effectiveness.

the administration of healthcare facilities where data were collected. Written informed consent was obtained from all the participants, and confidentiality was ensured.

## Results

A total of 94 participants were invited and included in the study (response rate 100%). Half (50%) of the respondents were general directors of the healthcare centers. More than half of the study population (64.9%) were female, and one-third (33%) were aged more than 40 years. About 41% had bachelor's degree (41.5%). A quarter (25.5%) of the participants had 11–15 years and more than 20 years of experience (Table 1).

Table 2 presents the score of factors affecting the IAE in patient safety. The mean score for different factors on a scale of 5 ranged from 3.95 (IC) to 4.46 (competencies). The mean score for perceived IAE was 4.36 ( $\pm 0.64$ ).

Regarding differences in the perceived IAE for patient safety with respect to the sociodemographic and professional characteristics of the participants, we did not find any significant difference in the mean scores (Table 3). Table 4 shows the correlation between the studied domains among the study participants. Pearson correlation showed that there was a positive significant correlation between all the domains studied and the IAE for patient safety. However, the correlation with the objectivity domain was weak (0.295) though significant (*p* value 0.004). Based on these findings, the hypotheses stated to be studied in this study were proven to be true.

## Discussion

One of the key functions of healthcare systems is to provide effective and safe care to the population it serves. Patients' safety is one of the top priorities for healthcare

**Table 3.** Differences in the perceived internal audit effectiveness for patient safety

Variable	N	Mean	SD	t/F	p value
Gender				1.085	0.300
Male	33	85.11	14.72		
Female	61	88.29	11.50		
Age				0.242	0.914
21–25 years	3	91.43	14.85		
26–30 years	16	88.04	12.44		
31–35 years	18	84.92	14.23		
36–40 years	26	87.25	9.04		
More than 40 years	31	87.56	14.91		
Education				2.348	0.101
Diploma	37	88.26	12.17		
Bachelor's degree	39	88.79	11.75		
Postgraduate (master and PhD)	18	81.43	14.87		
Job position				2.036	0.136
General director	47	70.00	14.14		
Medical director	47	83.81	14.09		
Experience				1.377	0.248
1–5 years	19	90.38	10.22		
6–10 years	13	83.96	14.41		
11–15 years	23	87.33	13.70		
16–20 years	15	81.90	9.27		
More than 20	24	89.52	13.99		

**Table 4.** Correlation between the studied domains with perceived IAE

	Support of management	IC	Independence	Objectivity	Competencies	IAE for patient safety
Support of management						
<i>r</i>	–					
<i>p</i> value	–	<b>0.000*</b>	<b>0.000*</b>	<b>0.000*</b>	0.135	0.568
IC						
<i>r</i>	–	–	0.775	0.452	0.265	0.596
<i>p</i> value	–	–	<b>0.000*</b>	<b>0.000*</b>	<b>0.010*</b>	<b>0.000*</b>
Independence						
<i>r</i>	–	–	–	0.522	0.278	0.571
<i>p</i> value	–	–	–	<b>0.000*</b>	<b>0.007*</b>	<b>0.000*</b>
Objectivity						
<i>r</i>	–	–	–	–	0.441	0.295
<i>p</i> value	–	–	–	–	<b>0.000*</b>	<b>0.004*</b>
Competencies						
<i>r</i>	–	–	–	–	–	0.510
<i>p</i> value	–	–	–	–	–	<b>0.000*</b>

*r*, Pearson correlation. \*Indicates a statistically significant difference at  $p < 0.05$ . IC, interdepartmental coordination; IAE, internal audit effectiveness.

managers and leaders. Internal audit is one of the widely used tools for importing the quality of care, bringing transparency, and ensuring patient safety [6, 7, 10]. However, internal audit is not an independent tool to achieve quality and patient safety. The IAE depends on various organizational, cultural, and procedural factors such as organizational support, resources, competencies

of auditors, objectivity, independence, coordination and communication, feedback, and compliance with the recommendations [14, 29–32].

This study is one among a few attempts to assess the factors influencing the IAE for patient safety in the context of the Saudi healthcare system. Participants from different health cadres and institutions in Taif were

included. The mean scores out of five for the factors affecting the IAE were support of management 4.04, IC 3.95, independence 4.03, objectivity 4.20, and competence 4.46, while for the IAE, the mean score was 4.36. There were no differences in the perceptions about the IAE among the general manager and medical directors of PHCs which indicated both groups are equally supportive of the issue. Correlation analyses found that the IAE was significantly associated with all five factors. All the factors had moderate association with the exception of objectivity which had weak correlation with IAE.

Organizational support or support of the management is one of the key factors which affect the IAE. The mean score for support of management in this study out of five was 4.04. A study conducted among listed companies in India reported a little higher score of 4.15 [28]. Another study from Malaysia also reported higher scores of 4.28 for management support in Malaysian industries [33]. On the other hand, a study in Israeli organizations reported very low scores for management support 2.53 [25]. In this study, although the scores are on the higher side, still there is room for increased management support for importing the IAE to ensure patient safety. It is therefore important for healthcare leaders and managers to provide support to the internal audit departments to improve their role in the provision of safe and effective health care to the population.

Audit is not the function of an audit team or department only; it needs close coordination and cooperation with other departments in order to carry out its activities effectively. Therefore, IC in the internal audit process is essential for its effectiveness in patient safety [33]. The score of IC in this study (3.95) is lower than reported in a study from Malaysia (4.19) [33]. This is an important finding which needs the attention of health managers and audit teams to improve IC in order to avoid duplication of efforts and miscommunications. Clear policies and processes for communication and coordination should be outlined in order to make internal audits effective.

Audit teams have to be unbiased and independent in order to carry out the audits without influence of any type. Researchers have suggested that the independence of internal audit teams is one of the important factors which can influence the IAE [34]. The mean score for the domain of independence in this study was 4.03. This is lower than reports from India (4.52) [28] and Malaysia (4.46) [26]. On the other hand, studies from Vietnam and Israel reported lower scores [25, 35]. Audit teams must be free from any influences, and organizations must ensure that any conflicts of interest between audit teams and departments are identified beforehand to achieve the goals of audit. This can be achieved by setting up audit

teams which in addition to the representatives of different departments also include full-time employees not directly working with any other department.

Objectivity of audit refers to the extent to which audit teams are free from interferences and bias, and have appropriate academic and professional qualifications. The score in the domain of objectivity was 4.20 in this study. Studies from Malaysian industries and companies have reported varying scores of objectivity, 4.04–4.33, which may be an indication of a lack of compliance with the standards among audit teams [26, 33]. Ministry of Health and clusters should develop standards for internal audit for different types of institutions and departments which are objective with minimal subjectivity in assessment. The audit teams must comply with the IA standards of the organizations to achieve objectivity in the assessments.

The domain of competence in this study was the highest scoring domain with a mean score of 4.46. This score is higher than studies from Israel (3.07) [25] and Malaysia (3.88) [26] and (4.38) [33]. Studies have shown that the competence of the internal audit team has strong effects on IAE [21, 22]. It is therefore necessary for organizations to invest in the skills and professional development of audit teams for conducting effective audits.

Effective internal audit provides an organization with a pathway to achieve its goals and objectives. It helps identify the areas where there are deficiencies and provide recommendations for improvement. This is even more important in healthcare organizations where along with other organizational objectives, patient safety is one of the top priorities. In this study, the IAE was perceived to be 4.36 out of a total score of 5. The proportion of respondents rating it high was 85%. This is similar to a study among Vietnamese companies where participants rated effectiveness to be 4.34 [35]. In contrast, a study from India reported slightly higher scores of 4.55 [28]. This high rating in the current study indicates that internal audit performs well in the healthcare system of Taif. There is also a need to carry out further research which directly relates internal audits with patient safety indicators objectively.

An internal audit does not work in isolation. A number of factors can affect the IAE in any organization. Support of management was found to be significantly associated with the IAE in this study. This finding is consistent with studies from different parts of the world where lack of managerial support was identified as one of the barriers to effective internal audits [18, 19, 36]. The correlation coefficient between support of management and IAE in this study was 0.568 which is higher than India (0.367) [28] and lower than another study from Saudi Arabia (0.66) [22].

IC was significantly associated with IAE in this study. This finding is consistent with other studies [22, 28]. Literature has consistently reported coordination among departments as one of the facilitators of effective internal audits [19, 23]. Achieving IC among departments in healthcare settings can help reduce duplication of efforts and resource wastage, and achieve patient safety goals.

The independence of the audit team has been reported to be a strong predictor of IAE by researchers who studied various types of organizations in different countries [19, 22, 35]. In this study, a moderate correlation was observed between the IAE and independence. This is similar to another study conducted in public sector organizations in Saudi Arabia (0.43) [22]. Other studies from India and Malaysia however reported a weak association of independence with IAE [28, 33]. These findings may reflect that practice of internal audit varies widely from settings to settings and thus its effect on the IAE.

Objectivity in this study showed a weak but significant correlation (0.295) of objectivity with IAE. This finding is consistent with a study conducted in Malaysian industries where they found a weak association of objectivity with IAE [33]. Nonetheless, two systematic reviews have concluded that objectivity is a facilitator of effective internal audits [18, 19].

Lack of competence of internal audit teams is another factor that has been reported as a strong barrier toward IAE in the literature [18, 36, 37]. This study also found a significant association between internal audit staff and IAE (0.510). This finding corroborates the finding of another study from Saudi Arabia where researchers reported a significant correlation of competence with IAE (0.59) [22]. This may be an indication of the fact that in Saudi Arabia, there are standards on internal auditors' selection to standardize the competence levels of internal audit teams.

This study utilized validated and reliable tools to measure the various factors which affect the internal audit. This is also reflected by the high values of Cronbach's alpha. Participants were recruited from different PHC sectors of Taif, which gives a good representation of participants.

There are certain limitations that should be considered while interpreting the results of this study. This study was conducted in one city only; therefore, results may not be generalizable to the whole Kingdom. Second, the study included self-reported responses from participants which may be subject to social desirability bias. However, this is a minimal concern as data were collected anonymously and there was no personal identification of the respondents. Third, any comparison made with other studies should be interpreted cautiously as those studies were mainly conducted in sectors other than health where goals, objectives,

and dynamics of operations might differ from the healthcare sector. Finally, due to resource and time limitations, this study could not include data on patient safety indicators (such as falls, medication errors, or procedural errors). Therefore, a direct relationship between internal audit and its effect on patient safety indicators cannot be judged.

## Conclusions

This study was able to study various factors which affect the internal audit performance in the healthcare system of Taif city. The scores out of 5 for the factors affecting the IAE ranged from 3.95 to 4.46, which indicates room for improvement in these domains as these were also found to be significantly associated with the IAE for patient safety. This study provides evidence for healthcare organizations and policymakers to improve internal audit and ultimately patient safety in the healthcare process through support, training, and resource allocation. Healthcare leaders and planners should consider various factors studied in this research while developing internal audit programs for their institutions. This study also provides a starting point for further large-scale studies to study IAE for patient safety and various factors which facilitate or hinder this process. Future research should also study the link between IAE with the patient safety indicators to produce more robust results.

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## Statement of Ethics

This study protocol was reviewed and approved by Research Ethics Committee of Directorate of Health, Taif, Saudi Arabia [approval #695, dated: 12-03-2022]. Written informed consent was obtained from all the participants.

## Conflict of Interest Statement

The authors have no conflicts of interest to declare.

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## Author Contributions

The author confirms sole responsibility for the study conception and design, data collection, analysis and interpretation of results, and manuscript preparation.

## Data Availability Statement

All data generated or analyzed during this study are included in this article. Further inquiries can be directed to the corresponding author.

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