Methods for Ensuring Quality and Protecting Patients: A Comparative Longitudinal Analysis

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ABSTRACT	ARTICLE DETAILS

Objective: To find out if the actions taken have an effect on the results on quality assurance and safety culture in a healthcare company. Setting: Health insurance for accidents and illnesses that happen at work.

Methods: The research looked at the link between Safety Culture and Quality Assurance measurements over time. It was a longitudinal observational study. People who took part came from small centers with less than eight employees (N = 52), big centers with eight or more employees (N = 707), and centers with quality managers (N = 91). Things were gathered between 2015 and 2016.

Results: In 2015, 595 health care workers answered, and in 2016, 491 did. Good progress was seen in both Quality Assurance (T-test = 3.5, p = 0.001) and Safety Culture (T-test = 5.6, p < 0.0001). Because of this, the quality culture improved more quickly (by an average of 5.5%) than the safety culture did (2.1%).

Conclusions: The reviews of the quality assurance goals and the reviews of the safety mindset were in line with each other. Because of this, the Safety Culture scores were seen to stay the same over time.

KEYWORDS: quality assurance; patient safety; healthcare organization

INTRODUCTION

A promise to meet quality goals is an important part of quality policy in high-reliability organizations (HROs), like hospitals and other healthcare facilities. The standard of care includes goals for how well it works, how efficiently it works, and how the patient feels [1]. Healthcare companies also know how important it is to promote safety practices and the resiliency analysis of clinical practice in order to make things better. Quality assurance and patient safety are often looked at from various angles that are connected in a clear way [2]. People who work directly with patients need to be involved in safety in order to improve the quality of the setting for patients [3]. The way healthcare workers think, feel, and act when it comes to quality, especially when it comes to their safety culture, is very important for healthcare organizations to change in order to reach their quality goals, such as making patients happy

[4–6].

Patient Safety Culture is made up of people's and groups' values, attitudes, skills, and habits of behavior that decide how committed, skilled, and knowledgeable they are with the company's health and safety programs [7]. One way for a health center to be involved in quality [4,8] is through its safety mindset. Bad outcomes for patients happen when workers don't take part in safety [9].

Safety culture has many parts, such as evaluating leadership styles, encouraging staff and front-line professionals to work together and cooperate, using evidence-based medicine, making sure that communication channels are working well, being able to learn from mistakes, seeing mistakes as system failures rather than individual failures, and putting the patient first [10]. Cross-sectional studies [11] are often used to test these.

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In the past few years, the patient safety culture measure has been expanded, and its effect on outcomes has been studied. But not many studies have looked at how safety culture, measured quality [12], and how patients see quality [13] are related. When most of these studies were done, they used cross-sectional methods [11]. The goal was for the results to help policymakers and health professionals deal with the risks that come with doing health-related tasks [8]. However, taking measurements alone might not be enough to make changes that last and improve patient care over time if specific actions are not also taken. Higher quality care can be reached by measuring quality and safety from the point of view of healthcare providers on the parts of care that need to be better. A health group, the Mutual Insurance of Work-Related Accidents and Occupational Diseases, was used to compare quality achievements and safety culture measures as part of this study.

METHODS

This was an observational, ongoing study that looked at the connections between evaluating the safety culture and evaluating the results of the MC Mutual Quality Assurance Plan (QA). Between May 2015 and November 2016, this study was done. It was possible to get a yearly measure of QA and Safety Culture. With help for 1.3 million workers in case of work-related accidents or illnesses, MC Mutual is a Spanish non-profit health organization. Four thousand people work there, and eight hundred are health workers who help about one hundred thousand patients every year. The quality assurance program that began in 2014 had 18 strategic goals, two of which were safety goals. These goals were divided into three main areas: introducing evidence-based treatment procedures and making risk maps; presenting a report system and quality improvement plans; and explaining evidence-based safe practices, such as correctly identifying patients, practicing good hand hygiene, using medicines safely, and avoiding surgical mistakes and falls. You can look at QA 2017–2019 to see what the QA's goals and plans are.

Subjects

143 people were asked to respond in 2015 (91 quality assurance coordinators and 52 professionals from centers with less than eight workers, or "small centers") and 145 people were asked to respond in 2016 (92 quality assurance coordinators and 53 professionals from small centers). The study looked at how the professionals felt about the results of the QA. It was expected that 60% of healthcare workers would agree with the QA, so these results showed a sampling error of about 3%.

Every healthcare center that is part of MC Mutual has a quality coordinator who helps connect their quality efforts with the QA. These quality managers are either doctors, nurses, or physiotherapists who went through special training and were in charge of letting their coworkers in their centers know about the QA. Professionals from small centers were chosen because they could help with QA's implementation for the whole organization. This was done because it was thought that smaller centers would be easier to implement than bigger centers, which are usually in provincial capitals and closer to intake. There were expected to be differences between the QA's evaluation and the Safety Culture because the quality coordinators helped plan the events and are therefore more likely to get feedback on their work. It was more reliable to hear from professionals from the small centers, though, about how well the quality and safety plan was being put into place. Eight hundred and fifty professionals, such as quality assurance managers, were asked to fill out the safety culture questionnaire in 2015 and 847 in 2016. It was found that 25 of the email addresses did not work. There was a promise of privacy, and personal information was not stored in the database.

Materials

The professionals gave the QA test [14], which had 24 questions. The Safety Culture questionnaire had 10 questions that were broken down into two groups that described 60% of the total variation [15]. These groups were the attitudinal component (5 items) and the instrumental component (5 items). It was looked at how reliable the questionnaire was (intra-class correlation value of 0.87) and how consistent each factor was (Cronbach's Alpha 0.83 and 0.81, respectively).

The review looked at the following areas in both tools: strategy (checking to see if they were committed to the quality and safety strategy, feedback from indicators, and risk maps); support systems for clinical decisions (digital record algorithms to help make decisions and make sure patients can access their clinical information); equipment (adequacy); follow-up (making sure tests are available when needed); person-centered care (respecting patients' values and preferences); and evidence-based practice.

According to a group of two quality technicians and two clinical managers, the QA actions were valuable. They agreed on the level of implementation (the whole organization vs. some centers) and the intensity of the actions taken to make sure they were implemented across all of MC Mutual's centers (small or large intensity). There was a number from 1 to 5, with 1 being low range and 5 being high range. This number was between 1 and 25.

Statistics

For each QA item, the percentage of compliance was found by comparing its number to the highest possible score on the response scale. The average level of compliance was estimated for the set of parts that made up the areas that were looked at. When the Safety Culture action was taken, the same steps were taken. A T-test for independent samples was used to look at the changes between the QA and Safety Culture compliance rates.

A quality assessment was also carried out by a quality

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worker and a clinical manager. They compared the level of change in the compliance scores with the actions planned in the QA in terms of their scope and intensity. The multi-scope and intensity assessment was used to compare the amount of change in the compliance results in each area. There was high congruence, light congruence, and a lack of congruence for each comparison. The rank-order correlation using Spearman's Rho was found to find the link between the scope and intensity scores and the amount of change in the compliance scores.

Results

In 2015, 96 professionals responded (67% of those asked), and in 2016, 91 professionals responded (63% of those asked). 70 were quality managers and 26 were professionals who worked in small centers in 2015. Twenty of them worked as professionals in small centers in 2016 and 71 were quality managers. In 2015, 499 professionals filled out the safety culture assessment (61% of those asked), and in 2016, only 400 professionals did so (47% of those asked). In 2015 and 2016, 62 of these were quality supervisors.

The QA scores were statistically different between the two waves, with the second review in 2016 having higher scores (T-test = 3.5, p < 0.001). The second wave's overall score on the safety culture questionnaire was also higher than the first wave's (T-test = 5.6, p < 0.0001). The answer trends in judging the QA and Safety Culture results were similar, but it was clear that QA was getting better faster than Safety Culture (Table 1). Also, the percentages of change for QA range from 0.3% to 13.4% (average: 5.5), and the percentages of change for Safety Culture range from 0.4% to over 8% (average: 2.1). Seven of the eight times (Table 2), the action's scope and intensity measures matched the intensity of these changes. Once the scope and intensity scores were ordered, there was a 0.89 (p = 0.003) Spearman's Rho value between the change in compliance scores and those scores.

It was found that quality coordinators got better scores than professionals, both in smaller centers (comparisons in QA achievement evaluations) and when all professionals were compared (comparisons in Safety Culture) (Table 3).

Table 1. Response trends and results comparison of the Safety Culture and Quality Assurance measurements assessment.

Areas	QA 2015 (N = 96)	QA 2016 (N = 91)	QA Improvement $ (%)	Safety Culture 2015 (N = 499)	Safety Culture 2016 (N = 400)	Safety Culture Improvement * (%)
Strategy	58.2	71.9	13.7 (p < 0.0001)	79.7	87.7	8.0 (p < 0.0001)
Support systems for	64.9	65.2	0.3 (p = 0.921)	92.4	93.5	1.0 (p = 0.095)
Equipment	44.0	53.6	4.6 (p = 0.226)	86.2	87.4	1.2 (p = 0.155)
Follow-up	71.9	75.2	3.3 (p = 0.32)	87.4	87.7	0.4 (p = 0.636)
Person-centered care	70.6	75.1	4.6 (p = 0.061)	82.9	85.8	3.0 (p = 0.001)
Evidence-based practice	60.0	71.1	11.1 (p < 0.0001)	89.1	89.9	0.7 (p = 0.241)
Delays	70.1	74.6	4.5 (p = 0.088)	86.9	88.2	1.3 (p = 0.065)
Cost-effective	67.8	70.0	2.2 (p = 0.535)	86.3	87.9	1.6 (p = 0.033)

$ Quality Assurance Mutuality Plan of MC Mutual (QA) Improvement is the difference between the QA 2016 and QA 2015 scores. * Safety Culture Improvement is the difference between the Safety Culture 2016 and Safety Culture 2015 scores. *p*-values are the average differences from/in the evaluations in the two QA and safety culture measures.

Table 2. Qualitative analysis comparison of the improvements on safety culture and quality assurance measurements and scope and intensity measures of the QA actions implemented.

Areas	QA Improvement $ (%)	Safety Culture Improvement * (%)	Scope × Intensity (Ranged 1 to 25)	Qualitative Assessment	Implemented Actions
Strategy	13.7 ↑↑↑	8.0 ↑↑	20	Greater congruence	QA dissemination and feedback
Support systems for clinical decisions	0.3 =	1.0 =	5	Greater congruence	Digital record
Equipment	4.6 ↑	1.2 =	6	Light congruence	Resuscitation trolleys, gurneys, and other equipment
Follow-up	3.3 ↑	0.4 =	9	Light congruence	Guidelines
Person-centered care	4.6 ↑	3.0 ↑	15	Greater congruence	Surveys to capture patients' views
Evidence-based practice	11.1 ↑↑↑	0.7 =	12	Lack of congruence	Specific training
Delays	4.5 ↑	1.3 =	9	Light of congruence	Delay criteria stablished
Cost-effective treatments	2.2 =	1.6 =	6	Greater congruence	Diagnosis and treatment criteria defined

$ QA Improvement is the difference between the QA 2016 and QA 2015 scores. * Safety Culture Improvement is the difference between the Safety Culture 2016 and Safety Culture 2015 scores. Degree of change in the compliance scores: = 0 to 2.9%, No change; ↑ 3 to 5.9%, Appreciable change; ↑↑ 6 to 8.9%, Important change; ↑↑↑ >9%, Obvious change. Scope ✗ Intensity range: 1 to 12, Small-range; 13 to 19, Neutral-range; 20 to 25 High-range.

Table 3. Response trends and results comparisons of the results evaluation of the safety culture and quality assurance measurements of the quality coordinators and the rest of the professionals.

Areas	QA 2015		QA 2016		QA $ Improvement (%)		Safety Culture 2015		Safety Culture 2016		Safety Culture Improvement * (%)	
	Coor [1] (N = 70)	Prof [2] (N = 26)	Coor [1] (N = 71)	Prof [2] (N = 20)	Coor [1]	Prof [2]	Coor [1] (N = 62)	Prof [3] (N = 437)	Coor [1] (N = 62)	Prof [3] (N = 338)	Coor [1]	Prof [3]
Strategy	55.3	63.5	72.4	70.7	17.1 ($p < 0.0001$)	7.2 ($p = 0.407$)	79.6	79.7	90.0	87.2	10.4 ($p < 0.0001$)	7.5 ($p < 0.0001$)
Support systems for clinical decisions	60.4	67.8	65.2	65.5	4.8 ($p = 0.511$)	−2.3 ($p = 0.456$)	94.4	92.2	96.6	92.8	2.2 ($p = 0.075$)	0.6 ($p = 0.267$)
Equipment	45.2	59.2	52.8	56.0	7.6 ($p = 0.069$)	−3.2 ($p = 0.693$)	89.2	85.8	93.0	86.4	3.8 ($p = 0.042$)	0.6 ($p = 0.504$)
Follow-up	73.6	67.4	76.8	69.0	3.2 ($p = 0.312$)	1.6 ($p = 0.824$)	87.8	87.4	93.0	86.8	5.2 ($p = 0.005$)	−0.6 ($p = 0.507$)
Person-centered care	69.6	71.8	76.4	70.0	6.8 ($p = 0.003$)	−1.8 ($p = 0.538$)	83.4	82.8	89.0	85.2	5.6 ($p = 0.010$)	2.4 ($p = 0.013$)
Evidence-based practice	58.2	64.2	70.4	73.0	12.2 ($p < 0.0001$)	8.8 ($p = 0.189$)	89.0	89.2	92.6	89.4	3.6 ($p = 0.029$)	0.2 ($p = 0.742$)
Delays	71.4	67.6	76.1	68.5	4.7 ($p = 0.051$)	0.9 ($p = 0.860$)	88.0	86.8	89.6	88.0	1.6 ($p = 0.296$)	1.2 ($p = 0.132$)
Cost-effective treatments	68.2	66.6	72.0	62.0	3.8 ($p = 0.312$)	−4.6 ($p = 0.581$)	88.6	86.0	92.0	87.2	3.4 ($p = 0.030$)	1.2 ($p = 0.161$)

[1] Quality coordinators, [2] Professionals from centers of less than eight workers, [3] All workers from MC Mutual centers, excluding quality coordinators. $ QA Improvement is the difference between the QA 2016 and QA 2015 scores. * Safety Culture Improvement is the difference between the Safety Culture 2016 and Safety Culture 2015 scores. *p*-values are the average differences from every professional group evaluation in every QA and safety culture measure.

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DISCUSSION

The data trend shows that putting in place a strategy for quality and safety has a good effect on the outcomes [12]. The evaluations used in this study came from health professionals and show how approaches, processes, and results have changed over time. It also proves that changes in safety culture happen more slowly than changes that happen when new quality assurance measures are put into place. Other research has shown that putting quality and safety goals into action together leads to bigger benefits [16]. These data indirectly back up this claim and show that improving quality has a ripple effect on other areas that are important for making care safer for patients.

In this case, the steps taken to improve things (making a quality strategy, a risk map, an incident notification system, a plan to bring in new professionals, going over guidelines and protocols again, or getting training in quality assurance) have led to better changes in the scores in QA. Leadership is important for two things: (1) encouraging professionals to do good work and have a positive view of quality assurance; and (2) making changes to procedures and making sure there is a good work environment that makes patients safer and improves performance [17]. In this way, it makes sense that job happiness and safety culture would be linked. In fact, a recent study from Spain measured the strength of the link between these two factors [18]. Leadership, and more specifically, supportive supervision, was found to be a strong predictor of proactive patient attitude in that study. The studies of quality managers of care and the other professionals are all part of this study. As expected, these comparisons are not the same. Quality coordinators of care have more direct knowledge, so their ratings are a little higher than those of the other professionals. Additionally, it was anticipated that the professionals at the smaller centers would receive the lowest ratings. This was due to two factors: (1) information wasn't spread as widely; and (2) the actions began at the larger centers, leading to more activities. Several studies done in a different setting found that front-line workers usually complained more about what the directive staff wanted them to do [6]. Also, some studies have shown that safety culture measures aren't always fair when it comes to the effects of good actions that make things safer [19]. This time, we see a similar trend. It's interesting that there weren't bigger differences when we looked at safety culture measures between quality coordinators and professionals who worked in smaller centers.

In the past, quality models have looked at how many steps were taken, and this study shows how important that criterion is. This finding might be useful for telling healthcare organizations to change how they evaluate quality and safety policies. In the short term, people may value quality products more than safety culture. However, safety culture is more stable over time.

There is no question that quality assurance and patient safety are closely linked, but there haven't been many studies that look at how they really relate to each other. The main purpose of this study was to look at how the two factors are related to each other in order to make our measurements even more useful.

LIMITATIONS

The subjective measures used in this study come from the QA and Safety Culture Questionnaire. The reaction rates are fine, but not all professionals answered, and the reasons why some didn't weren't looked into. Average results for QA and safety culture were not the same, so it was easier to make progress in QA than in safety culture. Professionals are the only ones who can say what they think about quality and safety; patients, who get care, were not asked for their opinions [20].

CONCLUSIONS

To sum up, having professionals regularly evaluate the outcomes of quality plans and safety cultures lets us keep an eye on how well the suggested changes are being used and how well they are working. Tests of safety culture tell us about attitudes in a broader sense, while tests of how well quality plans are put into action focus on more specific parts of direct patient care. As long as both measures agree, it seems like the plans meet the quality and safety standards needed for operation.

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