

# Putting Research Findings into Clinical Practice

## Feasibility of integrated evidence-based care pathways in otorhinolaryngology head and neck surgery at Sultan Qaboos University Hospital, Oman

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### تطبيق نتائج البحوث في الممارسة السريرية جدوى المسارات المتكاملة للرعاية المبنية على الأدلة في طب الأنف والأذن والحنجرة وجراحة الرأس والرقبة بمستشفى جامعة السلطان قابوس، عُمان

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**الملخص:** الهدف: هناك تصور مفاده أن الأطباء في عُمان يترددون في تبني الممارسة المبنية على الدليل. أجريت هذه الدراسة التجريبية لدراسة جدوى استخدام الممارسة المبنية على الدليل في طب الأنف والأذن والحنجرة - جراحة الرأس والرقبة. وكان الهدف النهائي تسهيل الممارسة المبنية على الدليل مع احتمال وضع نظام جديد لتنفيذ نتائج البحوث / الأبحاث المترجمة في الرعاية السريرية. الطريقة: أجريت هذه الدراسة المقطعية الاستباقية التجريبية باستعمال استبيان تم توزيعه على الأطباء في مستشفى جامعة السلطان قابوس في عُمان، وهو مستشفى رعاية ثالثة. شملت العينة 135 من الأطباء والجراحين الذين تتراوح خبرتهم السريرية ما بين 3 أشهر و25 عاما، بينهم متدربين وكبار الاستشاريين في مجالات الرعاية الصحية الأولية والرعاية المتخصصة. النتائج: معظم الذين شملهم الاستطلاع (90%) (فترة الثقة 95% بين 85 و 90%) كانوا موافقين (سواء كانت مجرد موافقة أو موافقة بقوة)، على أن بروتوكولات الممارسة المبنية على الدليل يمكن أن يساعد في صنع القرار. كما كان ما مجموعه 87.4% من المشاركين (فترة الثقة 95% بين 81.8 و 93%) كانوا موافقين أيضا (سواء مجرد الموافقة أو الموافقة بقوة) على أن الرعاية المبنية على الدليل يمكن أن تحسن النتائج السريرية، وصرح 91.8% من المشاركين (فترة الثقة 95% بين 87.2 و 96.4%) بأنهم سيستخدمون ويطبقون الرعاية المبنية على الدليل فيما إذا توفرت وأصبحت جزءا من نظام معلومات المستشفى. الخلاصة: إن الاعتقاد بأن الأطباء في مستشفى جامعة السلطان قابوس يترددون في تبني الممارسة المبنية على الدليل غير صحيحة. استحداث مسارات تلك الممارسة ممكن جدا على مستوى الرعاية الصحية الأولية. هناك حاجة إلى الدعم المؤسسي لتضمين تبني الممارسة المبنية على الدليل في نظم معلومات المستشفى، فضلا عن بحث نتائج أخرى لتقييم التحسن في نوعية الرعاية.

**كلمات البحث:** طب الأنف والأذن والحنجرة، جراحة، الرأس والرقبة، ممارسة مبنية على الدليل؛ بروتوكول سريري، مبادئ توجيهية في الممارسة السريرية، اتخاذ القرار، عُمان.

**ABSTRACT: Objectives:** A perception exists that clinicians in Oman are reluctant to adopt evidence-based practice (EBP). This pilot study was undertaken to study the feasibility of using EBP pathways at the point of care in otorhinolaryngology head and neck surgery. The ultimate aim was to facilitate EBP with the probability of developing a new system for implementing research findings/translational research at the clinical point of care. **Methods:** A cross-sectional prospective questionnaire pilot survey of clinicians at Sultan Qaboos University Hospital (SQUH), Oman, a tertiary care medical centre, was undertaken. Respondents included 135 physicians and surgeons with between 3 months and 25 years of clinical experience and included personnel ranging from interns to senior consultants, in areas ranging from primary care to specialist care. **Results:** Of those polled, 90% (95% confidence interval (CI) 85–95%) either strongly agreed or agreed that evidence-based practice protocols (EBPP) could help in decision making. A total of 87.4% of participants (95% CI 81.8–93%) either strongly agreed or agreed that EBPPs can improve clinical outcomes; 91.8% of participants (95% CI 87.2–96.4%) would use and apply EBPP in day-to-day care if they were available at the point of care and embedded in the hospital information system. **Conclusions:** The perception that clinicians at SQUH are reluctant to adopt EBP is incorrect. The introduction of EBP pathways is very feasible at the primary care level. Institutional support for embedding EBP in hospital information systems is needed as well as further outcome research to assess the improvement in quality of care.

**Keywords:** Otorhinolaryngology; Surgery, head and neck; Evidence based practice; Clinical protocol; Clinical practice guidelines; Decision making; Oman.

**ADVANCES IN KNOWLEDGE**

- *The study demonstrates the willingness of clinicians in Oman to adopt evidence-based practice (EBP) and evidence-based practice protocols (EBPP).*
- *The study demonstrates the feasibility of introducing EBPP and integrated care pathways (ICP) at the point of care.*
- *This study has the potential to lead to the innovative development of a new system for implementing research findings/translational research in the clinical setting at the point of care.*
- *Embedding EBPP and ICP in hospital information systems has the potential to help clinicians make decisions and apply translational research findings to clinical care, thereby raising the quality of care.*
- *During the process of preparing the EBPP research, gaps in knowledge were identified. These could be the targets for future research.*

**APPLICATIONS TO PATIENT CARE**

- *In the future, EBP will have far-reaching implications for patient care as embedding EBPP in the hospital information system will facilitate decision making and standardise patient care.*
- *Since most clinicians polled believed EBPP can help in decision making and improve clinical care and outcomes, this study has demonstrated the potential for raising the standard of patient care.*
- *In the future, EBPP will facilitate the task of applying the latest, most accurate evidence to patient care.*
- *EBPP could potentially reduce wasteful spending by preventing unnecessary, outdated investigations and treatments.*

**A**S THE VOLUME OF MEDICAL LITERATURE has expanded, the task of putting research findings into clinical practice has become increasingly overwhelming. Practitioners of evidence-based medicine (EBM) claim that it frees clinicians from practicing medicine by rote, guesswork, and variable experience. It also ends their dependence on out-of-date authorities, and enables clinicians to work with the patient, using medical literature as a tool to solve the patient's problems. It provides the clinicians with access to what is relevant, and gives them the ability to assess the validity and applicability of that information. In other words, it puts the clinicians in charge of information, the single most powerful resource in medicine.<sup>1</sup>

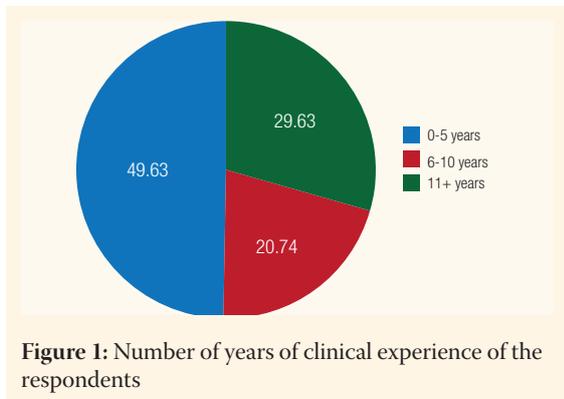
EBM integrates the best research and evidence with clinical expertise and patient values. When these three elements are integrated, clinicians and patients form a therapeutic alliance which optimises clinical outcomes and quality of life.<sup>2</sup> Although there are a vast number of translational clinical research findings in literature, not many are being applied in day-to-day clinical care. Some barriers to practising EBM are information overload with literature of doubtful validity, lack of motivation, and lack of time. One of the methods of evidence-based practice (EBP) is implementation of the best current guidelines; however, there is also an overload of information pertaining to guidelines.

Integrated care pathways (ICP) are pre-defined plans of patient care relating to a specific diagnosis, or intervention, with the aim of making

the management more structured, consistent and efficient.<sup>3</sup> The difference between ICP and EBPP is that with EBPP the level of evidence and grade of recommendation is mentioned. A search of recent literature reveals that although ICP are recent innovations, they are being adopted by clinicians in many specialties, like primary acute, cancer, and gynaecological care. Research has shown that using ICP, with a multidisciplinary team approach to care, significantly improves risk management, reduces health care costs and the length of hospital stays, and leads to increased patient and staff satisfaction.<sup>4-7</sup>

ICP in one form or another has swept over the world largely as a grass roots movement of clinical professionals. The movement has been motivated by a search for a more efficient, economical, high-quality tool that will improve the variations in patient care and outcomes.<sup>8</sup> EBM is important in all areas of medicine, including otorhinolaryngology, and head and neck surgery (ORL-HNS).

The aims of the present study were to test the feasibility of introducing EBP and ICP into the ORL-HNS unit in the Department of Surgery at Sultan Qaboos University Hospital (SQUH), Oman; to gather facts from key personnel regarding changes and improvements they would like to see; to identify if we are being overly optimistic with regards to EBPP, and to determine the probability of developing a new system for improved quality of care.



## Methods

A questionnaire pilot survey was conducted to determine the attitude of clinicians to EBP, the relation of EBP to improved quality of care, and the prospects of introducing evidence-based practice protocols (EBPP) in Oman. The main study on measuring outcomes of EBPP was submitted for approval to the Medical Ethics & Research Committee at SQUH. The subjects belonged to the following clinical specialties and departments: ORL-HNS, general surgery, accident and emergency, and family and community medicine. The questionnaire was clearly designed with a concise one-page layout and clear focus, and was subjected to internal and external validity tests. Internal validity was assessed by piloting the questionnaire with four experts who analysed it for validity of language, face, and content. Following this, the questionnaire was edited and arranged in a logical, brief, unambiguous and user-friendly format. Unnecessary and repetitive questions were detected and deleted. The external validity was carried out to determine whether the questionnaire measured what it was supposed to measure. Its reliability was found to be satisfactory. Random selections of doctors were invited to participate and the questionnaire was completed face-to-face. The aims of the study were clearly explained with a researcher on hand to answer questions and collect the completed questionnaire.

The questionnaire included the following nine categories/queries: 1) number of years of clinical experience and 2) practice setting. Questions 3 to 9 assessed different levels of agreement/disagreement regarding: 3) EBPP facilitating workflow; 4) the need of clinical protocols to be prepared based on best current evidence; 5) whether EBPP are preferable to routine protocols as they have a higher level of

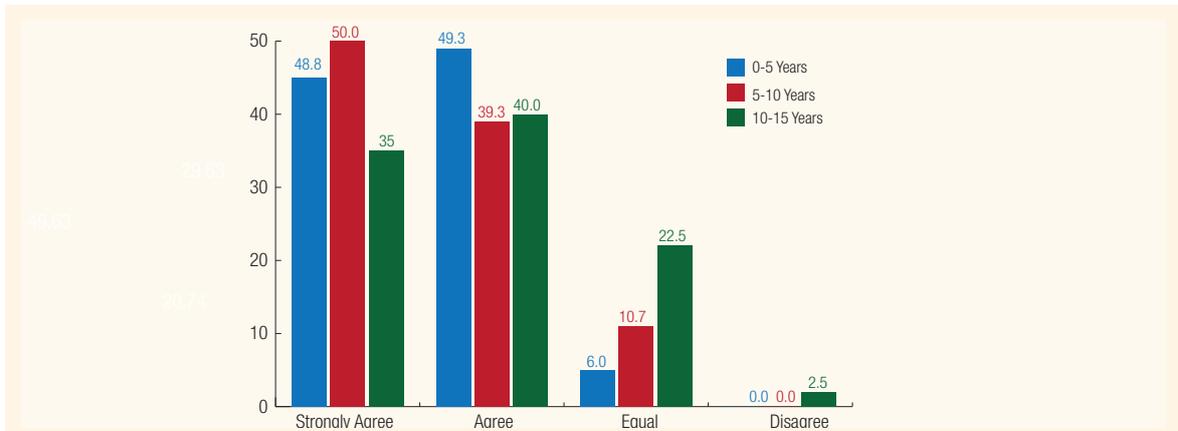
evidence and a higher grade of recommendation; 6) the respondent's level of belief that EBPP could help in decision making; 7) the need of pathways to be problem specific since they change according to triage assessments; 8) the respondent's feeling as to whether EBPP might improve clinical outcomes; and 9) the likelihood that the respondent would use EBPP, especially if embedded in the hospital information system. Statistical analysis was done using the Statistical Package for the Social Sciences (SPSS, Version 16, IBM, Chicago, Illinois, USA) and through a chi-square test. Various correlations were studied (e.g. between EBPP from different points of view and number of years of clinical experience). The confidence intervals (CIs) were calculated using the CI calculator for proportions.

## Results

The researchers distributed 150 questionnaires and 135 completed questionnaires were returned. The range of clinical experience of respondents ranged from 3 months to 25 years [Figure 1]. Overall, 71% of participants (95% confidence intervals [CI] 63.4–78.7%) agreed that EBPP are preferable to routine protocols as EBPP are prepared based on the best current research and include level of evidence and grade of recommendation. A total of 77% of respondents (95% CI 70–80%) agreed protocols change according to triage assessments, so they need to be problem-specific.

Overall, 90% (95% CI 85–95%) either strongly agreed or agreed that EBPP could help in decision making; however, 10% disagreed that EBPP could help in decision making. Of those polled, 43% (95% CI 34.7–51.4%) strongly agreed and 44.4% (95% CI 36–52.8%) agreed that EBP protocols can improve clinical outcomes, while in total of 87.4% of respondents (95% CI 81.8–93%) expected an improvement in clinical outcomes by using EBPP [Figure 2].

Overall, a total of 91.8 % (95% CI 87.2–96.4%) of the participants, (with 53.3% [95% CI 44.9–61.7%] having strongly agreed, and 38.5% [95% CI 30.3–46.7%] having agreed) would use EBPP and apply it in their day-to-day care if it were available at the point of care through the hospital information system [Figure 3]. Figures 2 and 3 also demonstrate the correlation between the number of years of experience with the expectation of clinical



**Figure 2:** Correlation of belief that evidence-based practice protocols can improve clinical outcomes to number of years of clinical experience

outcomes and a willingness to apply EBPP.

## Discussion

The present study tested the feasibility of introducing EBP and ICP into the ORL-HNS unit in the department of Surgery at SQUH, Oman. A literature search revealed no similar survey on the feasibility of embedding EBM in care pathways; however, there have been a number of surveys of the behaviour of doctors, nurses and related professionals in regards to EBM. It was estimated in the 1970s in the USA that only around 10–20% of all health technologies then available (e.g. drugs, procedures, operations, etc.) were evidence-based; that figure improved to 21% in 1990, according to official US statistics.<sup>9</sup>

When the EBM movement was still in its infancy, Dave Sackett emphasised that evidence-based practice was no threat to old-fashioned clinical experience or judgment.<sup>1</sup> This perception is one of the barriers to the extension of EBM practice. Greenhalgh wrote, “We clinicians would not be human if we ignored our personal clinical experiences, but we would be better off basing our decisions on the collective experience of thousands of clinicians treating millions of patients, rather than on what we as individuals have seen and felt.”<sup>10</sup> However, in spite of high levels of clinical evidence, extensive grades of recommendations, and translational research, there is still a lack of evidence-based decisions being applied to patient care at the point of care.

A pilot study for developing a model for implementing EBPP is being developed in the

ORL-HNS unit in the department of surgery at SQUH. This model has multiple steps, starting from assessing the needs of EBPP, preparing the pathways, getting consensus from participating departments, implementing the pathways, and studying the outcomes by auditing the improvement in quality. One of the perceived barriers is the attitude of clinicians towards EBP; this has never been studied in Oman.

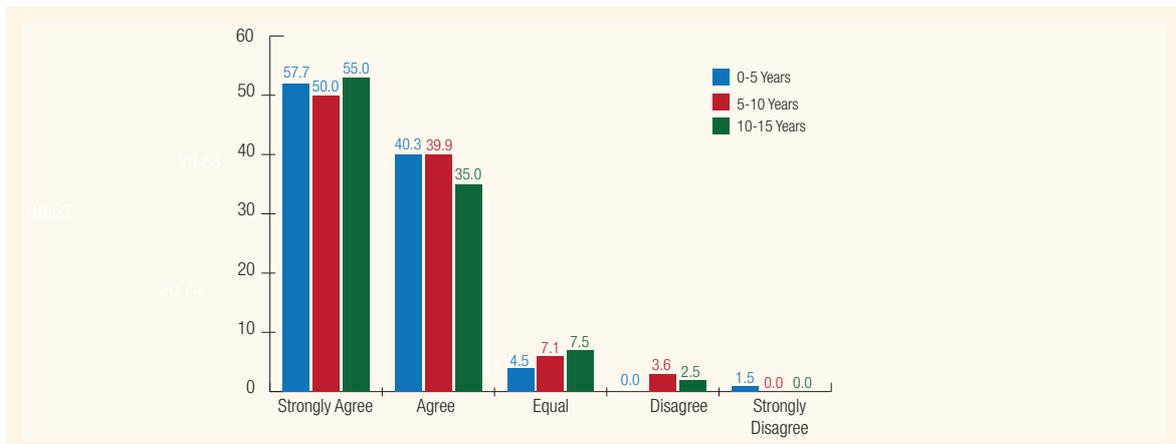
This feasibility study is important to determine the level of acceptance of EBPP prior to its implementation.

The significance of the present study was that it aimed to identify barriers to EBP and is one step towards applying the above described model and implementing EBPP.

The objectives of study have been met, as mentioned in the results, as 90% of participants strongly agreed or agreed that EBPP could help in decision making, and 87.4% of participants either strongly agreed or agreed that EBPP can improve clinical outcomes.

The ultimate aim of this study is the introduction of EBPP and ICP in ORL-HNS at the point of care by embedding the protocols into the hospital electronic patient records system. Of special significance in the survey is the finding that 92% of the participants would use these protocols and apply them in their day-to-day care if available at point of care. A weakness of the study was that there was no control so it was difficult to assess if answers were correct or not.

There are many advantages of using a strategy of implementing EBP and EBPP. In terms of *medical education* for health care professionals,



**Figure 3:** Correlation of belief that embedding protocols in hospital information systems will facilitate application of research at point of care to number of years of clinical experience.

self-directed, life-long learning can be achieved by EBP. Information management in the current age is a challenge, but EBP clinicians are taught to be efficient information managers. Introducing EBPP would enhance a collaborative learning strategy between the otolaryngologist and the primary care clinician. EBPP can also help improve the *quality of care* by solving clinical dilemmas at point of care, especially in the primary care setting. The users of EBPP, especially junior doctors, will be supported by the best evidence upon which to base their decisions rather than blindly following their seniors. There is the potential for EBPP to reduce wasteful expenditure that can occur when unnecessary or outdated investigations and treatments are ordered. In dealing with clinical problems, health professionals often differ in their approaches and opinions. There is a need for team work and a multidisciplinary approach to patient care which is facilitated by following EBPP. Quality requires the maximisation of benefits and minimisation of risks for the patients. For these reasons, 90% of participants believe EBPP would improve the quality of care. Finally, EBPP can lead to new *research* areas as, during the process of preparing the EBPP, research gaps could be identified and direct future research.

However there are also disadvantages of EBPP. There can be a *limited applicability of evidence*. This is possible, especially in patients with comorbid conditions. The clinical expertise of the clinician should be relied on in these situations; however, working with the best knowledge available is usually better than having no idea at all. Further

disadvantages can be a *lack of high-grade evidence, controversial evidence, inconsistent evidence, or incoherent evidence*. In spite of this, based on unpublished research, we have found fairly good levels of evidence for common ORL-HNS conditions. A final disadvantage of EBPP would be the *potential for limiting the learning* for junior doctors. One of the participants, who was against EBPP, even mentioned that it is like “spoon-feeding residents”. We disagree with this statement. Since most of the self-directed learning for residents is in order to pass examinations, they rarely find the time to ask the clinical questions which are vital to EBP. Moreover, critical appraisal and EBM language is routinely taught in journal clubs.

Based on this questionnaire survey, our recommendations are: 1) EBPP are preferable to routine protocols as they provide a rigorous and acceptable framework for making complex decisions at the point of care; 2) embedding EBPP in hospital information systems would enhance EBP at the point of care and improve the quality of patient care for ORL-HNS conditions at the primary care level; 3) EBM requires institutional support by way of specialist skills, a supply of evidence, and embedding EBPP in hospital information systems, and 4) further outcome-based research is needed to study the degree of quality improvement after implementing the described EBPP.

## Conclusion

The perception that ORL-HNS doctors in Oman are reluctant to adopt changes in EBP is incorrect.

Most clinicians, including otolaryngologists, believe EBPP can help in decision making and improve clinical outcomes.

The feasibility of introducing otolaryngology EBPP for use at the primary care level is very high. Embedding EBPP in hospital information systems would enhance EBP at point of care and help provide the benefit of research findings in the clinical care setting.

#### CONFLICT OF INTEREST

The authors declared no conflict of interest.

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