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Job Analysis, Appraisal and Performance Assessments of a Surgeon – A Multifaceted Approach

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ABSTRACT

The role of a surgeon is a complex one. A variety of skills and abilities in a different array of performance tasks is required before he can be competent in his job. As such, there is no simple rule of thumb that can be used to assess a surgeon's performance. As performance assessment and appraisal become increasingly important both for manpower decisions and personal development, it is important that we recognise the different roles a surgeon plays. Only then are we able to subdivide a surgeon's job demands into small manageable portions for analysis.

This paper examines the multi-faceted aspects of a surgeon's job, and how each facet should be individually assessed and appraised.

Keywords: analyse, perform, assess, surgeon, appraise, manpower

INTRODUCTION

Mention performance, and a cold chill runs down a surgeon's spine. He sees himself at the other end of a microscope – being scrutinised and judged. There is a perception of loss of control – much like a sailboat with a broken rudder in choppy waters, or an aeroplane caught in an unexpected thunderstorm. Gone are the days when a surgeon is only accountable to himself and his patient. A surgeon now even loses the right to confidentiality between himself and his patient.

A good salesperson is only considered as one when he sells alot. A manager is astute when he can turn company losses into profits. But how do we judge and appraise a surgeon's performance? And why? What parameters do we use? What qualities are we looking for in a surgeon, and how can his performance be improved?

What is performance?

Performance is a measure of effectiveness and efficiency in carrying out a complex job. It questions how well a surgeon "does things right, and does the right things". It refers to the global efficiency with which a complicated activity is completed, and has to be distinguished from "skills" and "abilities"[1].

Performance is only the end-point of a multitude of other factors which contribute to efficiency. Job satisfaction and commitment play an important role in the final performance of an individual. Various theories of motivation: Maslow's Hierarchy of Needs, Herzberg's Two-Factor Theory, Expectancy Theory and Behaviour Modification explain how motivators and demotivators act in an integrated way to affect job satisfaction, motivation and performance[2-4].

To appraise performance, a systematic job analysis is first required. This is a process where questions are asked about what surgeons do, and what skills, abilities, characteristics, traits and personalities are required to do the job well. The analysis will be complex as a surgeon's duties and tasks span a broad range of requirements, demanding a varied and diverse set of skills and abilities. Unlike salespeople or corporate managers, where performance criteria can be reduced to a single number in a profit-and-loss account, no number or descriptive word can be used to describe a good surgeon. Rather, an assessment of surgical performance has to be painted like a picture, using several sets of criteria, each one looking at one out of many different demands of a surgeon's workload.

Performance appraisal

Performance appraisal generates information about a surgeon's performance, skills and abilities. Instead of simply deciding on an absolute basis about whether a surgeon is fit for his job or not, appraisals are better seen as instruments used to paint a profile of a surgeon's strengths and weaknesses. This is used for making informed human resource and manpower decisions. It is information that will be helpful to universities for recruitment purposes in the appointment of academic staff, or hospitals when engaging competent registrars. More importantly, a surgeon is evaluated for his contributions towards organisational, departmental, specialty-related, professional and personal goals. By carrying out regularly spaced assessments over a period of time, it monitors his progress towards meeting these goals. This evaluation serves to identify reasons accounting for the present level of performance and to seek ways to improve future effectiveness. Training and development needs are identified to ensure the acquisition of necessary skills and enhancement of experience.

Performance appraisal has more than just an evaluative function. By identifying areas of weaknesses and correcting these with the relevant training, appraisals serve a motivational purpose.

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By setting goals to build on their strengths and correct their weaknesses, a sense of direction is instilled, and job satisfaction and motivation improved.

The present trend is towards the development of teams – with each team member complementing rather than competing with each other. The development of surgical teams allow team members to specialise in areas in which they are interested in or good at. This division of labour may be at the level of clinical work, with each surgeon working in a clinical specialty. Alternatively, the work delegation may be at a more general level eg. one member spending more time teaching, another co-ordinating research, while others concentrating on clinical work. The appraisal method is increasingly used to fill the skills gap in surgical teams, rather than using them for general assessment of performance.

Assessment methods

Assessment methods vary in validity and reliability, and also in what they measure. They must be accurate, relevant, technically sound and economical. For a measuring device to be accurate, it should be reliable and valid. Reliability simply means consistency. The test must have inter-rater reliability, which is consistency between individuals making the assessment. It must also have test-retest reliability which is the ability of obtaining similar results with repeated tests. Validity refers to the correspondence between scores on the testing instrument and the quality being measured. For a test to be valid, it must be demonstrated that those who score higher on the test actually do perform better at the job. But reliability and validity alone is not enough. The appraisal method must also be economically feasible and within the financial reach of a surgical department to carry out on a regular basis for selecting and monitoring surgeon performance.

No appraisal method has been found to be totally reliable and valid in measuring the various parameters of a surgeon's performance[5]. What is accurate for one aspect of surgical performance, may not be so for another. The use of "multiple assessment" by applying a variety of methods, carried out by a panel of assessors, to appraise surgeons on multiple dimensions will improve the objectivity of the exercise. The use of a panel of assessors will reduce subjectivity. It also allows the sharing of responsibility between line managers, surgical tutors, and personnel experts like psychologists and human resource professionals. The integration of input from clinical specialists who know the specific demands of the work and personnel experts who deal with more general factors like job satisfaction and motivation can only be beneficial.

The assessment of a surgeon's performance will encompass both the general personality and aptitude of the individual, as well as specific job-related factors and roles. There is a trend to move away from tests of IQ and general intelligence to more specific abilities and job skills related to a surgeon's many roles and responsibilities. He is a clinician, scientist, craftsman, manager, student, and teacher all rolled into one. It is like one person doing the work of six. With all these demands on his resources, it is small wonder that confusion and role ambiguity commonly afflict both the surgeon and those who seek to appraise him. There is a lack of clarity and understanding of job demands. Job analysis and its subsequent performance appraisal should be subdivided into its six component roles, and each one analysed and assessed separately.

The surgeon as an expert clinician

This is the surgeon's traditional role – one that he spends the most time in acquiring the requisite skills. It is in this area that he will invest most of his time and energy. It involves the traditional skills and perspectives of observation, analysis, diagnosis, problem solving[6], pattern recognition[7] and developing management strategies for his patients. It places demands on his intellectual ability and decision making. To do this, he requires an intimate knowledge of his discipline.

Furthermore, a moral and ethical relationship exists between a clinician and his patient. It is based on the intangible quality of humanity, integrity and the ability to inspire confidence in the patient. The patient will feel that the best possible advice and treatment had been administered if the surgeon is able to allay fears and remove doubts in an open, direct and honest way. It also incorporates emotional demands – compassion and empathy for those who need it, and an ever present concern for the welfare of his patients.

A recent research study in the United States showed that doctors who seemed hurried and disinterested are open to litigation even if they practice good quality medicine[8]. Poor communication skills and insensitivity to patients are a liability to the surgeon. Surgeons in training should be taught these people skills. This study only serves to confirm what is already generally known – that compassion and an ability to inspire patient confidence are necessary requisite skills.

Another study showed that when surgeons applied psychotherapeutic techniques during a cancer counselling interview, their patients responded with better psychological adjustment to the cancer[9]. Factor analysis of the Cancer Diagnostic Interview Scale (CDIS) revealed that the surgeon's caring attitude was perceived by the patients as more important than information giving.

Performance appraisal of the intellectual aspect is easily monitored. A multitude of tests and examinations stand between the would-be surgeon and his freedom to practice his craft in the wards and clinics. His clinical acumen is scrutinised by numerous panels before he is awarded his licence.

Unfortunately, appraisal in the emotional, ethical and moral aspects are neglected. This has a lot to do with the fact that it is difficult to measure

and assess what is intangible. Even if an attempt was made to obtain a measurement, there is a reluctance to accept the evaluation as being valid and reliable. But just because a quality is difficult to measure does not imply that no attempt should be made to do so. Pain is a subjective complaint, and yet a visual analogue scale is used for quantification and statistical analysis. Management and leadership attributes are extremely ill-defined, yet methods for measuring them have been developed and used in recruitment and training decisions[10, 11].

A good way to assess interpersonal and communicative ability is through feedback obtained from superiors, peers, juniors and patients. This could be in the form of a visual analogue scale whereby the surgeon under assessment is graded on a variety of factors related to interpersonal ability. By involving colleagues at all levels, objectivity is improved.

Another method is to obtain feedback from the patients. The most well studied form of analysing patient reactions to encounters with particular health providers is to assess patient satisfaction[12]. Measurement in patient satisfaction studies can be directed towards the clinician's behaviour and demeanour, towards technical quality of the treatment received, or towards the outcome of therapeutic interventions[13-16]. Studies of patient satisfaction is important as it is shown that satisfied and dissatisfied patients differ in their behaviour. Satisfied patients are more likely to remain with a physician, keep appointments, comply with treatment and use services. Such behavioural consequences of patient satisfaction should result in better medical care and improved outcomes. Examples of testing tools include the Evaluation Ranking Scale[17], Visit Specific Satisfaction Questionaire[16], Client Satisfaction Questionaire[18], and the Patient Satisfaction Questionaire[19].

Surgeons should spend time to watch and observe some of their other colleagues, in particular those in psychiatry, general practice and counselling. Surgeons should learn to develop skills in listening by participating in some of the many courses available on active listening. Tony Alessandra in his course "The Dynamics of Effective Listening", refers to the CARESS model which are the acronyms for Concentrate, Acknowledge, Research and Respond, Emotional Control, Sensing and Structuring.

The surgeon as a passionate scientist and researcher

A good surgeon must be passionate and fervent in advancing the horizons of scientific awareness. He should be an enthusiast actively pursuing the progress of new discoveries and inventions, and involving himself in frontier-breaking research. He is like an explorer in the land of new ideas, always seeking ways in contributing to scientific knowledge. Research is not just an ideal to aim for, nor is it only for the elite in the academic world. It is a necessary pre-requisite of surgical training and practice[20]. Surgical research is not just research carried out by basic scientists in laboratories. It must be researched by surgeons on the problems that surgeons face in everyday clinical practice, so as to improve patient care. In the words of Dr Francis Moore[21]: "The surgical investigator must be a bridgetender, channelling knowledge from biologic science to the patient's bedside and back again."

Performance in this area is judged objectively by the number of publications he generates, and subjectively by the distinction and calibre of his contributions. The acquisition of a research degree is a good demonstration of his mastery in this area.

However there is a tendency to judge a surgeon's research ability by looking at the number of publications he has to his name. This is very much like judging a surgeon's competence by looking at the number of patients he sees in the outpatient clinic or operations he does in theatre without taking into consideration the difficulty and complexity of the cases he is dealing with. It is like judging a diving competition without considering the level of difficulty of the dive. Perhaps a more accurate system is to implement a grading system for each paper. The number of points he accrues depends on whether his publication is a case study, a review, a retrospective study or a prospective, case-controlled, double-blind study. Also, a separate point system is implemented to take into consideration his level of involvement in the paper. If he is the first author, and designer of the study protocol, then more credits should accrue. This system will allow a more equitable comparison of the literary contribution each surgeon makes.

The use of peer review has been found to be an effective process in evaluating medical manuscripts[22]. It was found that most manuscripts that had been rejected by the American Journal of Surgery did not find their way into other indexed medical journals. A grading instrument[23] has been developed to assist editors in evaluating peer reviews. The grading instrument has shown good content validity and satisfactory inter-rater reliability. Other workers have tried to develop an instrument to assess the methodologic quality of articles reporting clinical research, and another to measure non-methodologic qualities such as clinical relevance, generalisability and adherence to ethical standards. Both these instruments have been reported as being reliable, valid and applicable to a variety of research designs[24].

Failure to achieve distinction in this field may be due to a variety of factors. They may be due to lack of interest, poor writing skills, lack of creativity and lateral non-linear thinking, or inadequate statistical knowledge. Each of these shortcomings should be identified and rectified through a process of motivational as well as skills training. The identification of a problem by itself serves no useful purpose. It is the ability to act on that knowledge to rectify the problem that brings on real

advancement and progress in a surgeon's career development. The surgeon should be encouraged to attend courses and develop expertise in the evaluative sciences like statistical methods and analysis, mathematical modelling and epidemiology. There are also good business, management and personal development courses that focus on accelerated learning techniques, self-motivation, neuro-linguistic programming (NLP), memory development and creative thinking.

The surgeon as a skilled artist and craftsman

Surgery, like karate, can represent "one of the highest expressions of the skilled use of the human body"[25]. The surgeon must possess the virtuoso and intuitive ability of a concert pianist. He must command mastery over his fingers, and perform surgery with the finesse of a maestro. His eyes probe the surgical wound searching for and avoiding signs of danger, while his fingers polish and sculpt the tissues like a master craftsman. The patient's life is literally in his hands.

Surgical performance can be measured on the Likert rating scale which contains 17 items to be graded by tutors, or with methods and instruments proposed by Kopta[26] and Spencer[27]. In an analysis of operative skills, it was found that academic predictors did not correlate or correlated negatively with operative ratings[28]. Conversely, neuro-psychologic test scores of non-verbal cognitive and psychomotor abilities showed a significant positive correlation with the ratings. These neuropsychologic tests provide measurements of relatively innate, non-verbal abilities including visual-spatial perception, motor sequencing and fine motor co-ordination, and stress tolerance.

Efforts to measure and predict postgraduate clinical performance using verbal cognitive indicators typically result in poor correlation between academic achievement and various criteria of clinical performance[29-31]. Non-academic and non-cognitive variables such as attitude, personality and experience have been found to have a better correlation with clinical ability and career performance[32].

Contrary to popular belief, pure manual dexterity is not the major dimension distinguishing the proficient surgical performance from the mediocre[28, 33]. Tests of manual dexterity do not correlate with technical surgical performance, and are therefore not valid in predicting surgical ability. Rather, non-verbal, visuo-spatial problem-solving abilities and the ability to distinguish essential from non-essential detail appears most crucial to superior surgical technique. Visuo-spatial problem-solving abilities refer to the capacity to rapidly analyse and organise perceptions based on multisensory information. The ability to sieve the wheat from the chaff, and to prioritise information as they are perceived, even in the presence of a high signal-to-noise ratio is critical. Also it is important to possess the ability to control and reduce anxiety, and to remain calm, collected and cool-headed during times of difficulty and stress in surgery.

Although non-cognitive abilities are generally thought to be innate, proper training and instruction should be able to overcome initial obstacles to proficiency, and to allow the surgeon to achieve his full potential. The motivational effects that result from a well-conducted appraisal program should also assist in developing that potential. Also counselling and advice on stress management and emotional control play an important part. Excellence in operative technique can come from an apprenticeship under a master surgeon, who is in a good position to assess performance and technical ability. In this way, surgery is very much like karate[34] where the teacher imparts skill and wisdom on a personal level. The expertise is acquired through a personal one-to-one contact between pupil and mentor.

Also in any complex motor task as in surgery, the learner identifies the subtasks and components, and learns them separately. With practice, adequate feedback and high levels of motivation, he is able to proceed from one stage of the motor act to the next with minimal interruption. When the subtasks become fully integrated and autonomous, they are difficult to identify and performance becomes smooth. Understanding how motor skills are acquired and integrated is important in allowing a surgeon to apply specific learning and teaching techniques in this area.

Computer assisted video evaluation allows a time efficient review of a surgeon's operative performance[35]. The use of psychometrically valid checklists with the video technology allows for the calculation of a psychomotor skill performance score. The feedback provided by this innovative method allows for an objective means of self-directed learning by the surgeon.

The surgeon as an astute manager and leader

"The nearer the management process gets to the patient, the more important it becomes for doctors to be looked upon as the natural managers"[36].

A surgeon must look beyond the confines of the doctor-patient relationship, and take a bird's eye view of the total environment in which he practices. He must be a team player, visionary, leader and motivator of men. He needs to sharpen his skills as a high impact communicator and diplomat. Most medical schools are deficient in management training, and a good surgeon should actively seek education in this area.

Management is the process of planning, organising, leading and controlling the human, material, and financial resources of an organisation. Managers are responsible for achieving organisational ends through people. This he does by supervising and motivating people in work organisations. A good manager must understand organisational behaviour which is the scientific study of behaviour and attitudes of people in organisations which contribute to organisational effectiveness. He must understand the use of motivation, organisational control and rewards

systems, job design and employee reactions to work. He must also be able to grapple with work group dynamics, problem solving, creativity, conflict management, and the use of influence processes like power and leadership.

Management skills are intangible and difficult to assess. Many business writers have argued fervently about what makes a good leader, and have even identified a few important managerial traits that will sieve the wheat from the chaff. But the pre-eminent necessity is simply to know and discipline oneself. "The good leader seeks virtues and goes about disciplining himself so as to effect control over his success. Otherwise he may know how to win but yet is unable to do"[37].

The surgeon as student and teacher

Knowledge is a dynamic entity. Either one is constantly garnering and amassing information, or it is spent and lost. It is only too easy to go down the slippery path towards ignorance and obsolescence. A good surgeon needs to be constantly learning or he soon forgets. He sees knowledge as a precious power-house that is to be treasured and kept secure. What he knows is twice learnt if he also teaches others about it. It is a continuous activity much like eating and breathing, and a surgeon who stops learning is unworthy of his vocation.

Learning should not only be confined to the clinical or technical aspects of a surgeon's responsibility. He should strife to be as good as he can in research, teaching and managing. The surgeon who thinks that he needs only be competent in the clinical and technical aspects deprives himself of the full joys and satisfaction of a complete and noble profession.

Baker[34] commented that "learning is a lifelong process, and teachers are always students of their art". He analyses the many parallels between Zen karate and surgical education, and emphasises the importance of self-examination in search of the truth. He quotes from Schmidt[38], giving a parallel description as to what the ideal qualities of a surgical tutor should be:

"... the teacher steps aside, reduces himself and invites the student to make his own decisions. The teacher changes from the dominant role of disciplinarian to the empathic role of midwife. He helps to create the ideal situation in order that the student may give birth to his own truth. The true and unique artist emerges when creative excellence begins to flow freely from the inner self." To borrow a quotation from Sir William Osler[39]. "The successful teacher is no longer at a height, pumping knowledge at high pressure into passive receptacles he is a senior student anxious to help his juniors."

How do we assess this revitalising process? Through Continuous Medical Education (CME) points or numbers of courses attended? No! We may take a horse to the water, but we cannot force it to drink. Learning or teaching is an activity that must come from the heart. It must involve the inner convictions and deep yearnings to study the miracles of the human body. Assessment of learning should not be process-based as in CME points. These only measure what is done to try to achieve learning. It does not reveal whether learning has actually taken place and how it is going to subsequently affect outcome at an individual, group and organisational level. The assessment of learning should be result-based to take into consideration the beneficial changes in knowledge, attitudes and behaviour that has been achieved in the different facets of surgical life, namely clinical, operative and technical, research, and managerial.

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