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ORIGINAL RESEARCH

What motivates surgeons to teach dissection anatomy to medical students and surgical trainees?

Annette Burgess¹

George Ramsey-Stewart²

¹Central Clinical School, Sydney Medical School, University of Sydney, Sydney, NSW, Australia; ²Disciplines of Surgery and Anatomy and Histology, Sydney Medical School, University of Sydney, Sydney, NSW, Australia

Introduction: Although a fading tradition in some institutions, having clinicians teach anatomy by whole-body dissection provides a clinical context to undergraduate and postgraduate medical students, increasing their depth of learning. The reasons for a clinician's motivation to teach may be articulated in accordance with self-determination theory (SDT). SDT proposes that for individuals to be intrinsically motivated, three key elements are needed: 1) autonomy, 2) competence, and 3) relatedness.

Materials and methods: Data were collected through semistructured interviews with eight surgeons who were supervisors/facilitators in the anatomy by whole-body dissection course for undergraduate students in the Bachelor of Medicine, Bachelor of Surgery program and postgraduate students in the Master of Surgery program at the University of Sydney. Qualitative analysis methods were used to code and categorize data into themes.

Results: Our study used SDT as a conceptual framework to explore surgeons' motivation to supervise students in the anatomy by whole-body dissection courses. Elements that facilitated their desire to teach included satisfaction derived from teaching, a sense of achievement in providing students with a clinical context, a strong sense of community within the dissection courses, and a sense of duty to the medical/surgical profession and to patient welfare.

Conclusion: The surgeons' motivation for teaching was largely related to their desire to contribute to the training of the next generation of doctors and surgeons, and ultimately to future patient welfare.

Keywords: motivation, surgery, anatomy, whole-body dissection

Introduction

Teaching by clinicians is central to the successful education of medical graduates, yet clinicians are increasingly a scarce resource within university teaching. Clinicians have a range of competing activities, including clinical care, administrative responsibilities, and research, placing increased strains on their commitments to teaching.^{1,2} Traditionally, the teaching of anatomy by whole-body dissection to medical students has been undertaken by clinical staff. However, in a recent review of anatomy education within Australia and New Zealand, it was revealed that such teaching is now largely undertaken by nonclinical staff, including medical students, physiotherapists, science graduates, and technical staff.³ There are many advantages to having clinicians teach within the medical program. Within anatomy by whole-body dissection courses, in particular, surgeons offer clinical contexts, relevance, and experience that cannot be provided by nonclinical staff.³

Craig et al (2010) predicted that the traditional practice of anatomy instruction by clinicians is likely unsustainable at many medical schools.³ However, the teaching of

Correspondence: Annette Burgess
Sydney Medical School – Central,
University of Sydney, Building 63,
Level 4, Royal Prince Alfred Hospital,
Missenden Road, Camperdown,
Sydney, NSW 2050, Australia
Tel +61 2 9515 8172
Email annette.burgess@sydney.edu.au

anatomy by nonclinical staff may lead to a lack of depth in understanding of topographical clinical anatomy³ and a loss of the invaluable phronesis (practical knowledge and wisdom) that is passed on by clinicians in their teaching of anatomy by whole-body dissection. At Sydney Medical School, there remains a small pool of nine committed retired, semiretired, and active surgeons who teach anatomy by whole-body dissection during an 8-week undergraduate elective course within the medical program (Bachelor of Medicine, Bachelor of Surgery) and as part of the 12-week postgraduate course within the Master of Surgery program.

Clinicians who teach within the university system are normally intrinsically motivated to do so, as the extrinsic rewards are often minimal.¹ By developing an understanding of surgeons' motivation to remain committed to teaching in anatomy dissection, we may be able to promote an interest in teaching among other staff, and also retain current teaching staff. Motivation is a very complex concept that has been investigated and theorized in a number of ways. The reasons for a clinician's motivation may be articulated in view of the self-determination theory (SDT), developed by Deci and Ryan.⁴ SDT proposes that for individuals to be intrinsically motivated, three key elements are needed: 1) autonomy, 2) competence and 3) relatedness. "Autonomy" refers to one's sense of choice and volition.^{5,6} "Competence" refers to one's sense of mastery and commitment to reflective practice to develop expertise.^{4,7} "Relatedness" refers to one's feeling of connectedness to others with similar goals and purpose.⁸ The aim of this study was to investigate surgeons' motivations to teach in the anatomy by whole-body dissection courses at Sydney Medical School.

Materials and methods

Data collection

Data were collected through semistructured interviews with eight surgeons who were supervisors (facilitators) in the anatomy by whole-body dissection course. The program coordinator is the second author, and therefore was not interviewed. All interviews were carried out by the first author. The interviews broadly explored the surgeons' motivation and experiences in teaching within the anatomy by whole-body dissection courses. Open questions were used to draw out issues of significance to respondents. For example, "What motivated you to take part as a supervisor in the dissection course?", and "Are there any benefits to you in teaching in the dissection course?" Ethics approval was obtained from the University of Sydney Ethics Committee.

Data analysis

Interview data were transcribed verbatim, with each participant being assigned an anonymous identifier (S1–S8), and analyzed using framework analysis.⁹ The initial analysis was conducted by the first author on a sample of the data to identify themes.¹⁰ In subsequent analysis of data, it was noted that the emergent themes from the initial inductive analysis resonated with key constructs within SDT.⁴ A coding framework was developed to code the entire data set.

Results

Utilizing SDT as a conceptual theoretical framework, we illustrate the surgeons' motivation and experiences in acting as facilitators within the anatomy by whole-body dissection course. Quoted material is identified by a corresponding number of S1–S8.

Factors relating to a sense of autonomy

This theme refers to the supervisors' sense of choice and volition in their teaching.^{5,6} Supervisors found it rewarding to explain to students the importance of the anatomy in relation to their own specialty and their own experience. They were empowered by having choice in what should be taught, and in being able to emphasize particular areas of clinical anatomical importance:

It gives you some kind of control to be able to say ... this is important in head and neck surgical anatomy. [S4]

Supervisors felt their input as surgeons into the teaching of anatomy was vital, as it provides a clinical context to teaching that can only be contributed by clinicians, enriching the learning experience for students:

We're custodians of very important knowledge, which is the fusion of clinical and scientific study, and we want to hand it on. The sense of achievement is imparting something that took us a long time to learn. [S1]

Factors relating to a sense of competence

This theme refers to supervisors being motivated by the sense of mastery and competence that the teaching tasks evoke.⁴ Supervisors reported that they found it motivating to revise and consolidate their knowledge in preparation for teaching:

It's a great stimulus to revise the work, because it's essential to be up to date. [S2]

Supervisors also reported that they enjoyed learning themselves while teaching, both from students and from one another, always improving on their mastery of the subject:

You're always learning new things from the students who pop up with bright questions or new information. [S5]

I like coming back to this group of colleagues, because I've learnt things from them, and between us, we've taught students things. The gynecologist sees things from a different perspective to me, and we've often bounced ideas off each other in the dissection room. [S1]

Supervisors were inspired by their students, and gained a sense of achievement from the students' immediate and long-term accomplishments, and the positive feedback received:

I've come across students a few years down the track ... and they've said ... I saw a patient with this problem ... and I remembered what you told me about the anatomy of this, and the clinical relevance of it. [S2]

There's a feeling of giving something back. Students you've taught ... they're doing wonderful things and have wonderful jobs ... it inspires you. [S3]

Supervisors' sense of purpose was increased by the students actually wanting to learn:

There is a sense of achievement because the people we are teaching want to learn. [S6]

Supervisors felt that their own enthusiasm for teaching may help to instill an ethos of teaching in future doctors:

It's also a way of inspiring them when their turn comes to do something similar to us – to help instill anatomical knowledge and then pass it on ... it's a very powerful motive. [S5]

Factors relating to a sense of relatedness

This theme refers to supervisors being motivated by the feeling of connectedness to others with similar goals and a similar sense of purpose.⁸ Participants expressed a sense of not only relatedness to others within the course but also a sense of relatedness and duty in relation to a number of elements, including their alumni, their surgical colleagues, the surgical profession, and to society.

The surgeons articulated a sense of belonging within the anatomy by whole-body dissection course. They expressed enjoyment in facilitating and mentoring a young, enthusiastic

group of people with a desire to learn anatomy, and watching them form their own future connections:

I've always enjoyed the association with students and residents. I think there's a great atmosphere here where the students develop a respect for each other. They're able to make mistakes with each other, and they're learning material that will last them for the rest of their professional lives. [S8]

The interviews disclosed that all supervisors were graduates of the University of Sydney. The supervisors appeared united by pride in their alumni, and dedication to the education of subsequent students within their field:

We've always had a pretty high standard of medical graduate, but we need to maintain this. [S7]

We want these graduates to be the best surgical anatomicists that we can produce. [S3]

Further to this, supervisors expressed a sense of loyalty to their surgical colleagues in wanting to maintain a high standard of training at the university:

It's a small group, admittedly, and many of us are old friends and colleagues from way back. We learnt anatomy together. This group embraces the spirit of collegiality which sets the standard and draws it all together. [S7]

We're basically doing it out of loyalty ... friendship ... a sense of rallying to the call ... to get clinical anatomy teaching going again. [S5]

In a broader sense, supervisors expressed a sense of loyalty to the surgical profession itself. They felt indebted to the surgical profession that had opened up opportunities to them, and wanted to pass on knowledge and surgical ability in the new generation of doctors:

Fundamentally, you give something back in recognition of the great gift that we were given as students and as surgeons from our teachers and mentors. It amounts to dozens and dozens of people over a lifetime. It's a secondhand way, but a very powerful one, of contributing to the future of the profession with a big multiplier effect, because if you can facilitate the anatomical learning of these cohorts of really smart young people, that's a big investment for the next 50 years. [S5]

Surgeons made continual reference to society's growing, aging population and subsequent health care needs.^{11,12} As health care professionals, making a difference by contributing their highly valuable expertise to the training of future

health care professionals was a motivating factor for the supervisors:

Everyone (in the future) is going to live to be a great age ... so we are going to need all these surgeons to care for them. They must therefore know surgical anatomy. [S3]

We want to make sure that the doctors who graduate now have some idea about topographical anatomy that applies to their future practice ... you want doctors to know what they're doing. [S4]

Factors hindering motivation

Although monetary rewards were not important to the surgeons, they collectively expressed concern that their roles were not recognized by official university titles or by a level of remuneration that was reflective of their expertise. Importantly, they felt that doing so would provide a foundation for succession of their roles, and proof of sustainability of the course itself:

I think a formal title is useful. It's a recognition of the dissection course and our position and expertise. [S3]

One can see that the ideal situation may be to go back to teaching everyone considering a surgical career in anatomy by dissection. Therefore, we need a structure for this. So accepting payment lays the basis for future development. [S6]

Supervisors indicated that they would like to be better informed about the current medical program, and provided with more information about the medical curriculum, particularly the surgical components:

It would be helpful to know more about the students' current medical course and how surgery is taught. [S1]

Discussion

Our study used SDT⁴ as a conceptual framework to explore surgeons' motivation to teach students in the anatomy by whole-body dissection course. SDT is only one of many scientific approaches to human motivation, but its concepts make intuitive sense.^{13–15} SDT identifies three key factors in motivation: autonomy, competence, and relatedness.⁴

Autonomy

People want to have a sense of choice, whether working with others or alone.^{5,6} The supervisors have their own teaching responsibilities, within their areas of expertise, and control over what they teach.⁴ The opportunity to highlight the importance within a clinical context of their own clinical

specialty was important to supervisors. Certainly, the practice of having clinicians teach anatomy by whole-body dissection has decreased in recent years,³ and this course provides an opportunity for these surgeons to demonstrate their value in this tradition.

Competence

People like to feel that they have a "mastery" of what they do,¹⁶ and are motivated by reflective practice, where their mastery can meet an even higher level of expertise, engaging and motivating them from within.^{4,7} Although the surgeons are already experts within their own disciplines, they still expressed enjoyment in preparing for teaching activities, revising course content, and learning from teaching. Faculty function best when they have an optimal level of challenge,⁵ and the supervisors feel challenged by anticipating and responding to student questions, conferring with each other, and keeping up to date with related clinical advancements.

Supervisors also expressed a great sense of achievement in the mastery of teaching itself. Satisfaction from their students' positive feedback and achievements and continuous development in understanding of anatomy was a highly motivating factor.⁴ Supervisors also felt a sense of responsibility to develop a culture of teaching.¹⁷ They anticipated that by demonstrating their own commitment to teaching, they may instill a culture of responsibility for teaching in the students themselves.

Relatedness

A sense of connectedness in groups may be fostered when individuals have similar goals and a similar sense of purpose.^{8,18} In line with other literature, the main reasons for supervisors continuing to teach are undoubtedly altruistic: they want to help students to become excellent doctors.¹ Our feedback from surgeons revealed that their beliefs in professionalism and values relating to service and duty to society had a strong impact on their desire to teach.¹⁹ Affordance of inclusive leadership facilitated this autonomous motivation, and surgeons enjoyed spending time working together with old colleagues.

Surgeons were inspired to teach by those who taught them, and recognized their own role in developing the knowledge and skills of future doctors.¹² The supervisors felt that teaching formed part of their professional identity within the surgical profession. The idea of having a duty to teach, and a duty to the surgical profession itself, with the expectation that something should be given back to the profession was unanimous.

Implications of findings

Surgeons who teach anatomy by whole-body dissection are an extremely valuable and rare resource. They are essential to the provision of a clinical context to students. Our study revealed areas of motivation to include a belief that their contribution to teaching is valuable; their sense of duty to their alumni, their colleagues, and the surgical profession; and the desire to contribute to future health care needs of society. By enhancing surgeons' motivation, faculty engagement may be increased, along with morale and productivity.²⁰ Motivation can be fostered by asking people for their ideas, input, and concerns, and acting on them.²¹

Our study revealed the main support for teaching availed to the surgeons was that generated within their own small community. Although the surgeons were not concerned with any sense of prestige amongst colleagues, they felt that it was important that their positions and the course itself be better recognized by the medical school and the university. While monetary reward was not considered a strong motivator for the surgeons, it would provide recognition of their skill and expertise, and lay a foundation for future positions and succession plans for the course. Additionally, supervisors want to be provided with more information regarding the wider medical curriculum. Certainly, providing explanations and meaningful rationale can increase faculty engagement.²²

Limitations of the study

The limitations of our study include its qualitative nature. Although all surgeons were interviewed, the number was small, and their attitudes may not necessarily be reflective of the wider surgical community.

Conclusion

The surgeons' reasons and motivation for voluntarily contributing to the teaching of the anatomy by whole-body dissection teaching courses were largely related to their desire to contribute to the next generation of medical practitioners, and ultimately future patient care and the welfare of society. Elements that facilitated this desire were a strong sense of community and leadership throughout the courses, and a shared sense of duty and commitment to the surgical profession. We also identified key elements to maintaining their interest and in recruiting further clinicians: appropriate recognition from the university and associated support.

Disclosure

The authors report no conflicts of interest in this work.

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