

## The influence of learning environments on medical education: a qualitative research study in one Japanese medical school

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### Abstract

**Background:** Japan has undergone dramatic change relating to both undergraduate and postgraduate medical education, with the influence of the hidden curriculum being largely disregarded. This study explores themes concerning what hidden factors affect undergraduate and postgraduate medical education in bedside learning in a Japanese medical school and teaching hospital.

**Methods:** The study was conducted on a one-to-one semi-structured interview basis, using qualitative methodology. Year 5 medical students and post-graduate year 2 junior residents at a teaching hospital were surveyed, with interviews being conducted over an 8-month period, each one lasting 30 to 60 minutes. The interviewees' perceptions concerning the quality of teaching in their bedside learning and related experiences were collected and analyzed thematically.

**Results:** Twenty five medical students and twenty three junior residents consented to participate in the interview. Six main themes emerged; persistence of hierarchy and exclusivity, existence of gender issues, overestimation of medical knowledge and skills, and underestimation of attitudes, perception of education as having a low priority, prevalence of positive/negative role models, and relationships with colleagues.

**Discussion & conclusions:** There were both commonalities and differences between the results of the UK study and our study. While such differences may be due to the curriculum or educational practices, we suggest that there is a universality of the effects of a hidden curriculum that exists even if there is a significant difference between countries in their demographic backgrounds.

**Keywords:** hidden curriculum; undergraduate education

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### Introduction

If the medical teaching and learning environment continues as it is, "Reform without Change" (Bloom, 1995) will likely remain the norm, and moves to implement curriculum reforms may be destined to fail.

The United Kingdom has undergone significant curriculum reform in undergraduate medical teaching over the past decade, including a transformation from the didactic teaching of factual knowledge to a more problem based learning methodology, utilizing and promoting students' initiative (Williams & Lau, 2004). However, very little attention has been paid to the effects of a hidden curriculum (Lempp & Seale, 2004) identified first by Jackson and other curriculum scholars in the 1970s (Wear, 1998), and later defined by Hafferty in the field of medical education, as "a set of influences that function at the level of organizational structure and culture (Hafferty & Franks, 1994, Hafferty, 1998).

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The significance of a hidden curriculum has been gradually recognized in the field of medical ethics education largely as a result of a grassroots movement originating in North America, aiming at developing students' values, social perspectives and interpersonal skills (Goldie, 2000). Hafferty (1998) argues that much of what is learned in medical schools does not come directly from within the stated, intended and formally offered curriculum. Furthermore, as noted by Branch *et al.* (2001), it is generally accepted that while the hidden curriculum is seldom explicitly recognized or acknowledged, it deeply affects the behaviours and attitudes of medical students and residents. It is also related to the future emotional effect as described by Mary Seabrook (Seabrook, 2004) which plays an important role in learners' retention of knowledge, conceptualization of phenomena, and behaviours (Haidet & Stein, 2006). This is especially the case in the field of medical ethics education, where prior studies have suggested a negative correlation between the stage of medical training and the students' moral development in such skills as ethical sensitivity or moral reasoning (Patenaude *et al.*, 2003; Goldie *et al.*, 2004; Seabrook, 2004; Haidet & Stein, 2006). These increasingly apparent ethical and educational issues, that have largely been relegated to a background status, have recently surfaced, raising the level of consciousness concerning the significance of the hidden curriculum.

As noted by Teo (2007), Koza (2006) and Onishi and Yoshida (2004) Japanese medical education has also undergone dramatic changes over the last decade. In Japan, the undergraduate curriculum is delivered over 6 years. The initial 4 years are planned for pre-clerkship, such as liberal arts, basic medicine and clinical medicine (Oda & Koizumi, 2008). The remaining 2 years are planned for clinical clerkship. After the graduation, a 2-year-long rotation becomes mandatory, which is known as *shoki-kenshu*, meaning "residency." In the course of the 2 year-long rotations, interns rotate through 7 specialties (internal medicine, surgery, emergency medicine or anesthesiology, pediatrics, psychiatry, community-based medicine, and obstetrics and gynecology.) Once they've finished the rotations, young doctors enter *koki-kenshu*, meaning specially-based residencies (Teo, 2007). In relation to undergraduate medical education, the Japanese government, through the Ministry of Education, Culture, Sports, Science and Technology, insisted on the development and implementation of a model core curriculum which

outlined and pinpointed essential components in undergraduate medical education (Goldie *et al.*, 2004; Koza (2006). Postgraduate medical education was similarly put under the microscope. Starting in April 2004, the government introduced a mandatory two-year postgraduate clinical rotation, whereby all graduates needed to undergo training in a university hospital or teaching hospital designated by the Ministry of Health, Labour, and Welfare (Onishi & Yoshida, 2004; Teo, 2007).

The purpose of this study was to identify and delineate themes concerning the existence and status of ostensibly hidden factors affecting undergraduate and postgraduate medical education in bedside learning in Japan. The study was conducted at a Japanese medical school and teaching university. We focused on bedside learning because it is where patient care is delivered, and key role modeling and learning occurs.

## Methods

The study was conducted on a one-to-one semi-structured interview basis, using qualitative methodology (Pope & Mays, 2006; Diccio-Bloom & Crabtree, 2006).

Undergraduate year 5 medical students in the initial stage of clinical training in a Japanese medical school and postgraduate year 2 junior residents at a Japanese teaching hospital were selected for this comparative study, intending to take purposive samples considering the issues of cohort changing effect and attitude shift. Given the overview of prior studies (Self *et al.*, 1993; Patenaude *et al.*, 2003), we selected these two groups of learners, because the influence of the hidden curriculum is more easily understood in clinical bedside learning, rather than in preclinical didactic learning.

Interviews were conducted over an 8-month period in 2007, each one lasting 30 to 60 minutes. For confidentiality, all exchanges took place in a private room in the medical school. A preliminary interview guide was created, in which an abbreviated form of some interview questions from a previous study were included (Lempp & Seale, 2004), in addition to some new questions concerning career choice. The instrument was designed to gather and measure the interviewees' awareness and experiences concerning how the quality of teaching is affected by the hidden curriculum in bedside learning.

Characteristics of the study participants are shown in table 1. The students and residents were selected by random and quota sampling, stratified by sex and age to ensure that these characteristics were represented, with the whole population as the sampling frame. Ethnicity, academic background, and family

status were not stratified, as there was hardly any difference among the study subjects. We did not obtain religious information from the study participants in the interest of protecting their privacy. However, it is reasonable to assume that this had no significant effect on the data due to most Japanese being atheist.

**Table 1: Characteristics of study participants\***

	Year 5 medical students (n=25)	Post graduate year 2 student (n=23)
Mean age	25	27
Sex	Male 18 Female 7	Male 17 Female 6
Ethnicity	All Japanese (except one male student†)	All Japanese
Entry to medical school‡	After high school (including gap years) 25 Obtained degrees except M.D. 0	After high school (including gap years) 23 Obtained degrees except M.D. 0
Family status (parents or sibling's in medical professions)	Single 24 Married 1 Has children 1	Single 23 Married 0 Has children 0

\*No characteristics were outside population norms.

†There was no difference in ethnicity: Except for one overseas male medical student from Nepal, all subjects were Japanese. (This had no significant effect on the results).

‡Like other tertiary education, medical school in Japan begins immediately after graduation from high school, but lasts 6 years.

All interviews were carried out exclusively by two of the authors (MMu and HK). Initial interviews began with open-ended questions, and proceeded in line with the interviewee's response. A pilot information collection trial was carried out, with five interviews each of medical students and junior residents. This was done to consolidate the content and the length of interview times, leading to the construction of the final interview guide (table 2). Interviews were continued until no new themes emerged from the data. While saturation occurred after the 17th and 18th respective interviews of medical students and junior residents, further interviews were undertaken to see if any new themes emerged.

Where participants consented, interviews were recorded, transcribed verbatim, and independently analyzed by two of the authors

(MMu and HK) using the constant comparison method. Where participants did not consent to recording, notes of the main points were taken, and only verbatim parts were utilized. To analyze the data thematically, the transcripts were initially re-read, separated into segments of text, and labeled with a thematic code. Following this, each of the two interviewers independently sorted the coded text segments into separate categories, according to content.

Finally, these categories were grouped and distilled and a number of broad themes emerged. The preliminary result was presented to the third author (MMA), unfamiliar with this research project at the time, to validate and revise the findings. All three authors contributed to the discussion, interpretation and agreement of the final result.

**Table 2: Interview guide**

Introduction / Icebreaker: training atmosphere	1. What do you think about your training, in general?  2. What do you enjoy most / least in your training?  3. Has the medical training met your satisfaction? Why / Why not?
Knowledge and skills of medical practice	4. What technical / diagnostic skills and knowledge do you wish to acquire the most?  5. Do you reasonably expect to be able to attain your medical goal at this stage? Please explain why or why not.
Career choice in medicine	6. What career decision-making plans do you have?  7. What factors affect your choice of specialty?
Impact of training on individual medical students / resident professional relationships	8. What motivated / demotivated you to practice in your bed side learning / training? Could you provide some actual examples?  9. What difficulties did you experience in your training? Could you describe what happened?  10. What did you like / dislike about your contact with your mentors, paramedical staff, and colleagues? Could you give examples?
At the end of the interview	11. Finally do you have any issues you want to add concerning clinical training? Is there anything else you think is important for your clinical training?

To protect the interviewees' privacy, all data was processed anonymously, and any information which could result in the identification of the respondent was eliminated. All participants completed written consent forms in addition to providing verbal agreements before participating in this research.

### Results

Twenty-five medical students and twenty-three junior residents (nearly 25% and 30% of the whole year respectively) took part in the study. No participant declined and all medical students and junior residents consented to be interviewed. Although one junior resident declined to be recorded due to information privacy, there was no marked difference in the results. Six main themes emerged; the persistence of hierarchy and exclusivity, the existence of gender issues, an overestimation of medical knowledge and skills, and undervaluing of the patients, the perception of

education as having a low priority, the prevalence of positive/negative role models, and relationships with colleagues.

#### **1) The persistence of hierarchy and exclusivity**

Medical students and junior residents both described the great influence of hierarchy. They mentioned that they were treated unfairly for no other reason than their lower position in the ward. They had observed, heard, or even experienced intimidation and humiliation by tutors, which suggests serious consequences of traditional bedside teaching.

"The attending physician's unreasonable behaviour and humiliation: He gets angry just at the sight of a junior resident for no reason at all. He constantly blames others when he can't tell someone what he wants to say, and never admits he's wrong. But he is always very polite and humble when he greets senior doctors" (junior resident 4).

There were also numerous reports of verbal abuse and vilification of other departments or institutions by senior staff, causing deterioration in the relations of interdisciplinary or multidisciplinary teams. Such claims of superiority, self-importance and defamation of others worried students and residents alike.

"They keep telling everyone awful stories about other departments and colleges. They have convinced themselves that theirs is the best way of doing anything. I'm sick of hearing about it" (medical student 23).

## **2) The existence of gender issues**

Both medical students and junior residents described problems relating to the peculiarity of the conventional male-dominant position in Japanese medical society. One female participant reported that she couldn't tell male tutors about her severe menorrhagia, and another had to put up without micturition during a long operation resulting in cystitis. Yet another participant mentioned that a female colleague had been subjected to sexual harassment.

"Men are in the majority. Well, I have severe menstrual pain . . . But I'm too embarrassed to say that's why I can't continue bedside training on a given day. I'm sure they can never understand how hard it is for me. Creating a supportive atmosphere for women is very difficult. I don't think there's really much hope . . . Cooperation and support among female staff is so important" (medical student 15).

Some female students and residents voiced concern about marriage and bearing children in the future. Family issues and work-life balance was also a serious matter for them in choosing their career. One female student bore witness to a female doctors' career choice that had been affected by the awareness of both strength and status issues.

"For me, it's really hard to decide which specialty to choose, paediatrics or psychiatry. I've heard, 'You shouldn't choose paediatrics. The work is very demanding, and it'll be hard to get married and have children.' That's why psychiatry seems the better choice right now, I think" (junior resident 18).

"The reason why I chose ob-gyn is...that I'll be able to have the expertise to help women. Male doctors would look down on me if I chose dermatology or ophthalmology. Well, of course that's not the only reason, but..." (junior resident 5).

## **3) An overestimation of medical knowledge and skills, and undervaluing of the patients**

While Japanese medical students empathize with their patients, junior residents tended to overestimate their medical knowledge and skills, and undervalue the humanity of the patient, not unlike their UK counterparts. As shown in the representative statements below, drawn from interviews with junior residents, a holistic approach to medicine was markedly absent.

"The more you meet your inpatients, the more you get to understand them as a whole. You feel like you can experience their life . . . Yeah, I've seem 'em all" (medical student 9).

"I'm highly motivated when I get the chance to acquire some usable skills . . . Central venous catheter insertion here, and cerebrospinal injection there . . . even cardiopulmonary resuscitation - I tried external cardiac massage and electric shock, and the patient recovered sinus rhythm. Of course, that's no big deal . . ." (junior resident 8).

## **4) The perception of education as having a low priority**

Despite the fact that some medical students or junior residents accepted their clinical teachers being late for or absent from timetabled lectures due to a perceived justification of giving priority to clinical practice, both groups mentioned that tutors tended to not infrequently ignore scheduled times for classes or learning experiences. They further noted that they had experienced unannounced schedule changes or canceled lectures without prior notice from the tutor, which served to demotivate them by implying that education was less than necessary.

"I suppose it can't be helped because they are probably busy with many other things to do, but . . . it's really irritating to spend so much time waiting (for them) with nothing to do. Then, when they come, they seem to be running late for some other engagement, and make do with some brief handouts and a 10 minutes lecture, after which they promptly leave, saying, 'you're dismissed'" (medical student 1).

While medical students expressed disbelief or surprise at being ignored or ridiculed by tutors for their lack of medical knowledge in case conferences or on ward rounds, junior residents mentioned that tutors lost their enthusiasm for teaching upon realizing that the

residents' affiliation period was too short for them to engender any significant change. Tutors in general did not appear to wish to engage in clinical teaching, and seemed to afford it a low priority.

"They ignored us and left us alone in the ward. Any effort we made to communicate with them was fruitless and ineffectual. They dealt with us in a lackadaisical manner . . . often replying 'it's nothing to do with you, and a waste of my time.' They probably thought that one month (the duration of the mandatory training assignment) was too short to achieve anything, so they weren't really committed to helping us, and just ignored their responsibilities" (junior resident 14).

### **5) The prevalence of positive/negative role models**

Some medical students and junior residents mentioned the beneficial effect of devoted mentors, which clearly illustrates the powerful influence that positive role models on trainees. Conversely, others reported that negative role models had demotivated them.

"Some doctors taught us conscientiously and enthusiastically. They gave us detailed instructions that were most useful to us as learning aids. They both impressed and motivated us" (medical student 7).

### **6) Relationships with colleagues**

While medical students in the UK reported highly competitive characteristics, Japanese medical students in the same year of training considered themselves to be more cooperative. However, junior residents in Japan, like medical students in the UK, tended to be more competitive than Japanese medical students.

"(As a class) there are variations in how well skills are learnt, just as there are with individual drive and motivation, but as a group, we must do everything cooperatively throughout the year. Consequently, I must always take care to preserve the group's unity, which bothers me some" (medical student 2).

"When you feel like your colleagues are superior to you . . . like, for example you notice

that they have more clinical knowledge than you, or they can deal with a difficult situation than you've never experienced, . . . that creates a great deal of pressure" (junior resident 10).

## **Discussion**

We found both similarities and differences when comparing our results to those of previous studies in the UK. Four similarities were evident: Primarily, the persistence of hierarchy and exclusivity caused negative emotions such as intimidation or humiliation, which likely interfere with the learning process, as noted by other researchers, such as Haidet & Stein (2006). Lempp & Seale (2006) found that certain learners tended to be more affected than others, arguing that "shy and quiet female Asian students were more likely to be humiliated or ignored by consultants during ward rounds". Secondly, as noted by both Reed *et al.* (2001), and Kaneto *et al.* (2009), gender is still an issue. Discrimination still exists, and males are still predominant in medical schools and professional health care, despite the large proportion of women entering medical schools and working in various medical fields in both Western countries and Japan. Rose *et al.* (2005) emphasized that problems concerning sexual harassment experienced by women are also equally common issues in both Japan and the West. Thirdly, perceptions of education as having a low priority, as noted in our study, were in general accord with studies by both Wear (1997) and Seabrook (2003), which found things like "doctors had little opportunity to discuss teaching" and "educational values become subordinate to the requisites (i.e. research and clinical practice) of the organizational structure of the medical school". Education-based academic career pathways in medicine for whatever reason, are not afforded a credible high status, and like the West, the Japanese medical education field needs to resolve this dilemma. Finally, in terms of positive/negative role models, we maintain that mentors need to perceive and comprehend the significance of their role in teaching those under their charge, which is consistent with the view espoused by Haidet & Stein (2006) and Dobie (2007).

Conversely, we discovered significant differences between UK and Japan in two particular areas. Firstly, there was a marked variation in overestimating medical knowledge and skills, and undervaluing the patient. Japanese medical students tended to focus on understanding their patients' human dimensions as a whole, using interpersonal skills rather than medical knowledge and clinical skills, which is one of the main aims of contemporary medical education, as borne out by its emphasis in recent curriculum reform in the UK (Williams & Lau, 2004). However our results also suggest that a holistic approach to medicine tends to fade away by the time Japanese medical students become junior residents. We suspect that this interesting result may be due to curriculum differences in British and Japanese medical education. More specifically, Japanese medical students tend to have less time in hospitals on a practical basis due to the structure of the medical curriculum in Japanese medical universities.

Other researchers such as Haidet & Stein (2006) and Hirsh *et al.* (2007) have argued that values such as excellence in communication tend to become eroded and marginalized during training, which might also be applicable to the junior residents in our study. Another report by Branch *et al.* (2001) claims that skills which medical students in the West develop during their clinical years were often not practiced until post-graduate training in Japan, and that the clinical skills of Japanese residents were comparable with those of American medical students in years 3 and 4. Thus, the seemingly favourable results of the Japanese medical students noted in our study may be a by-product of the curricular differences noted above.

The same rationale can be applied to the second dissimilarity we noted, namely feelings toward colleagues. A British study conducted by Lempp and Seale (2004) suggested that competitive characteristics were more prevalent in clinical students than non-clinical students. Moreover, the Japanese approach towards education, which stresses didactic lectures, book-learning and rote memorization - an educational philosophy which is much like that of many other East Asian nations - is teacher-centered (Teo, 2007) which may also have an effect on the junior residents' eagerness to impress their mentors. One further point that might deserve mention is Japan's cultural background. In society, the "sempai" (senior) "kohai" (junior) relationship tends to place constraints on individual

behaviour, as does the tendency for most Japanese to prefer homogeneity and harmony as opposed to standing out by emphasizing individuality. This arguably leads to more harmonious relationships within a group.

It should be realized that there are limitations to this study, some of which are inherent in the methodology used to carry out the research. These include participants being collected from a single medical school. For further external generalizability, studies of other medical schools are needed. To investigate different points of view, future studies in the preclinical stages, and of faculty members are needed as well. Additionally, one of the researchers is a faculty member of the medical school, which could have influenced the results, in spite of a guarantee of interviewee confidentiality. There was also a potential linguistic problem, concerning translation from Japanese into English. All interviews were undertaken in Japanese, and later translated into English. To ensure that the results were both cogent and reasonable, all interviews were back-translated into Japanese. Back translation both improves the reliability and validity of the research by requiring that the quality of the translation is verified by an independent translator, translating back into the original language (Brislin, 1970). Comparing the two, no conceptual discrepancy between the original and back-translated results was evident.

Many of the aspects identified in this research may be concerned not with the influence of the hidden curriculum but the effect of the learning environment, which is also in need of attention. It is complicated to distinguish the influence of the hidden curriculum from the effect of learning environments, because the underlying premises of the culture of medicine are not as easily perceived and exist as a kind of "white noise" in the background (Marrinker, 1997; Haidet & Stein 2006).

Strengths of this qualitative methodological approach include the ability to explore the participants' thoughts, experiences, and perceptions; values which are difficult to comprehend or express numerically by quantitative research. We adopted a one-to-one semi-structured interview in a private room rather than focus on group interviews, to guarantee the individual more privacy and allow them to talk more freely. Another reason for adopting the semi-structured interview style was to protect the participants' information so that they could speak honestly without fear of

repercussions. The data remained anonymous and was protected from anyone who had any conflict of interest with the participants. The total commitment to confidentiality is a major strength of this study.

## Conclusion

In conclusion, even bearing in mind that there are limitations to this study, the results poignantly indicate that at least some effects of the hidden curriculum in medical education are likely to exist in common in many so-called advanced countries, despite the differences in their demographic backgrounds, cultures and philosophies. This is all the more intriguing when one considers that Japan adopted Confucian pedagogical principles from China, and a 19th century western medical format from Germany (Teo, 2007), yet still exhibits the same effects from a hidden curriculum in medical education as most Western countries. These findings can be used for the reform of faculty development, which may bestow a crucial, positive effect on the quality of medical teaching. The authors look forward to exploring this topic further.

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## Authors Contributions

Manabu Murakami conceived the design for this research. Manabu Murakami and Hidenobu Kawabata conducted interviews and analyzed preliminary data. Masaji Maezawa modified the initial results. All three authors discussed, revised, and approved the final results. Manabu Murakami wrote the initial draft of the manuscript and all three authors revised and finally approved the manuscript. Manabu Murakami is the guarantor.

## Ethical Approval

Formal ethical approval was obtained from The University Ethics Committee at the Hokkaido University.

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