

Cost and Value in Health Professions Education: Key Underlying Theoretical Perspectives

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Abstract

Background: Health professions education is expensive. There has been a growing realization of this cost, and this realization has led many educators to explore new models of health professions education that could be both low cost and high value. This, in turn, has led to a small but growing research base in the field. However, until now, new research and practice has largely proceeded in the absence of theory. Studies of the cost-effectiveness, cost benefit, and cost utility of health professions education have been carried out with little consideration of potential theoretical underpinnings. This article attempts to redress this current shortcoming in the literature. It outlines a number of economic theories that are likely to be most relevant to health professions education. **Theories:** A number of theories are available that can underpin thinking, research, and practice in the field of cost and value in health professions education. The most relevant theories include human capital theory, signaling or screening theory, the cost-of-production theory of value, the theory of supply and demand, and cost and productivity theory. These different theories offer contrasting approaches to illuminate and understand the complex nature of cost and value in health professions education. However, given the different perspectives of educational stakeholders (e.g., learners, teachers, institutions, and governments), no single theory is likely to address all their contrasting needs. Indeed, some of the theories complement each other (e.g., human capital theory and supply and demand theory) insofar as human capital is a resource that is subject to the forces of supply and demand. **Conclusions:** Theories that relate to cost and value in health professions education should influence research methodology and practice in this field. In turn, research findings should feed thinking about theory and should enable the development of more profound theoretical underpinnings of research.

Keywords: Cost, health professions education, theory

INTRODUCTION

Health professions education is expensive.^[1] It costs an enormous amount to provide undergraduate education, postgraduate training, and continuous professional development for doctors, nurses, and other health-care professionals. There has been a growing realization of this cost, and this realization has led many educators to explore new models of health professions education that could be both low cost and high value.^[2] This, in turn, has led to a small but growing research base in the field.^[3,4]

However, until now, new research and practice in cost and value within health professions education has largely proceeded in the absence of theory. Studies of the cost-effectiveness, cost benefit, and cost utility of health professions education have been carried out with little consideration of potential theoretical underpinnings in this field. Theories help us to understand the

nature of complex phenomena. Theories provide different “lenses” by which we can look at complicated problems and issues. Theories focus attention on different aspects of the phenomena that are being examined and offer a framework within which we can develop understanding. By the same token, as there is no single way to understand the nature of a complex problem, many (theoretical) lenses can be applied to a problem, each focusing on a different element of it.

This article attempts to redress this current shortcoming in the literature. It identifies, describes, and discusses a number of theories that are relevant to the economics of health professions

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education. By its nature, it cannot be comprehensive; not all theories can be included. Most of the costs related to health professions education are associated with people, be they teachers or learners, and so the theories outlined in this article are pertinent to people and their motivators. The five most relevant theories related to cost and value in health professions education are human capital theory, signaling or screening theory, the cost-of-production theory of value, the theory of supply and demand, and cost and productivity theory. This article concentrates on these key perspectives – describing and critiquing their relationship to cost and value in health professions education.

HUMAN CAPITAL THEORY

This theory is perhaps the most predominant theory within educational economics. Human capital is “the accumulated knowledge and skills that make a workforce productive.”^[5] As such, investment in human capital increases the marginal productivity of health professionals and in doing so provides both private returns and social returns to such capital investment. The human capital theory attempts to theorize education as an economic activity that drives economic performance for both individuals and populations. The human capital theory posits that human activities in education are driven by the economic self-interest of stakeholders who are acting in free markets. In the case of health professions education, an individual may wonder how much to invest in his/her education in order to increase his/her employability and income in the long term.

Consider the following example from students’ perspective: assume that the cost of their tuition fee for their medical degree is £50,000. By deciding to study full time, the student forgoes earnings of £100,000 over the 5 years of his/her study. Students still have to pay for accommodation and subsistence, but this would be necessary regardless of whether they are studying or working (although the level of “indulgence” may differ between students and nonstudents for such necessities). Assuming that they live in an imaginary interest-free country, and also putting aside issues such as the time value of money, they work out that their medical degree would enable them to earn £300,000 more over the course of their working life than they would have earned without a medical degree. According to the human capital theory, students’ investment in education would be fully justified and they would be behaving rationally in taking up their course.

The problem can also be viewed from the state’s perspective. For example, the state might invest £200,000 in the education of a student, but could measure the output of the qualified practitioner in contributing to a healthier and more economically productive population. This increased economic activity might be worth £400,000. Here, again, the investment in health professions education would be justified from an economic perspective.

The strength of the human capital theory is its simplicity for users to understand. The theory is also supported by evidence.

For example, there is a correlation between education and earning potential that has been reproduced across a variety of contexts. According to Willis,^[6] education is “an investment which receives a pecuniary return in the labour market”. At a macroeconomic level, many experts have linked investment in education and thus human capital with economic growth and have used this association to rationalize state investment in education. Along with developing human capital, states must also ensure that the resultant resources are deployed. The only alternative to a state developing their own human capital is to import human capital from elsewhere, such as through economically progressive immigration policies. Regardless of how human capital is developed, there is considerable evidence that development of human capital delivers a competitive advantage to organizations and, through economic growth, countries as well.^[7] According to Foray and Lundvall,^[8] “the overall economic performance of the OECD countries is increasingly more directly based upon their knowledge stock and their learning capabilities.”

Perhaps, the clearest advantage of exploring investment in health professions education through the lens of the human capital theory is that it enables individuals and institutions to evaluate a variety of features of education in terms of their outputs; for example, the length and quality of undergraduate medical education and the resultant achievements of graduates. It thus facilitates reflections like those on whether a 3-year graduate entry medical degree could deliver similar outcomes to a 4-year degree albeit at lower cost to students and governments. It also allows debate about the need for funding to drive high-quality health professions education (and avoid the canard that thinking about cost will inevitably result in an Ersatz version of education). One interesting feature of human capital is its capacity to grow continually over a prolonged period.^[9] Monetary capital tends to be buffeted into troughs and peaks according to inevitable economic cycles; however, human capital’s growth tends to be more stable – probably because it is built on more solid and long-term educational foundations.

The human capital theory also enables institutions to consider the value of their human resources more explicitly and as a result, to use material economic incentives that will benefit both the individual and the institution. For example, an institution can use “golden handcuffs” to ensure that employees in whom it has invested (by paying for their education) remain with the institution in the long term. Even though human capital is in many ways an intangible asset, it can be leveraged to produce quite tangible outcomes. As a corollary, although human capital is clearly portable, this theory enables stakeholders to develop levers to restrict such portability. This can occur in health professions education and health care at a regional, national, or international level where the human capital theory can enable funders of education to develop policies that will deliver return on investment to the funder and prevent human capital flight (or “brain drain”) – for example, from rural and remote regions within a country, or even from one country to another.

Health care increasingly needs people who can undertake a variety of tasks, who can solve complex problems, and ultimately who can put their professional capability into action to achieve a variety of needed outcomes. These capabilities in innovation and creativity will become more important than physical assets such as hospital buildings or medical school lecture halls. The human capital theory empowers planners to make explicit the weight that should be placed on these human resources.

Despite these strengths, this theory has been criticized, with many criticisms relevant to health professions education. The most problematic assumption of the human capital theory is that it is based on the foundation that individuals act in a purely rational manner to deliver maximum returns to themselves. This is clearly far from being the case in health professions education. Many professionals will make irrational decisions about their education – perhaps by taking out loans to study and then allowing the distractions of university life to take them away from their studies. Even more professionals will pursue goals that will not deliver maximum returns to themselves – a health-care career is a vocation to many learners. Far from being solipsistic, health-care professionals make patient well-being their first priority. Lastly, health professions education is a long way from being a free market. All health-care systems impose restrictions on education: put simply success cannot be bought; students must still study and pass examinations to progress.

These criticisms have led a group of scholars in Germany to label the term “human capital” the German Un-Word (“offensive word”) of the year in 2004 because of its potential to quantify human beings purely in terms of their economic worth.^[10] An Un-Word is a word that suggests violation of human rights. Indeed, the human capital theory has been criticized over the assumption that the value to the society of an individual’s life could simply be equated to the present value of his/her earnings foregone, in that it fails to incorporate both the value of unpaid work and the utility value of leisure.^[11] However, putting these humanistic and perhaps fractious criticisms aside, an economic criticism of human capital theory is that there is currently no valid or reliable means of measuring human capital in and of itself – we can only measure the time and costs that must be spent to acquire it.

SCREENING THEORY

An alternative to the human capital theory as a means to provide a hypothesis underpinning cost and value in health professions education is signaling or screening theory. Given that human capital is an intangible asset, the screening theory suggests that graduates “use their educational achievements to signal their productivity potential to employers.”^[12] Employers in turn screen potential employees by looking at their educational qualifications as a guide to their quality.^[12] Both these activities are rational as educational qualifications undoubtedly reflect certain abilities. In terms of cost and value

in education, the theory would seem to drive students to invest in their education to impress future employers. However, the signaling or screening theory has also been subject to criticism. Educational qualifications are a reflection of abilities; however, they can be poor predictors and are certainly not the sole predictors of future success. For example, an applicant for a hospital post may have prestigious academic qualifications but may not be suited to do a practical job. An application process that is more closely linked to the required competencies of the job would be a better selection tool.^[13] Such a tool might be an interview or a customized application form or a simulation exercise; however, an advantage of the screening theory is that all these forms of assessments take up the employers’ resources and in contrast, educational qualifications are already available and so cost nothing.^[14] Another criticism is that the signaling or screening theory seems to reduce the function of education to solely a means of acquiring qualifications to acquire a career. This is unlikely to result in satisfactory educational, economic, or career outcomes for health-care professionals – learners will be unlikely to enjoy their studies, or develop useful knowledge or skills if they are purely thinking about passing an examination to get a job.

Even economic returns are less likely to be acceptable among learners with this mindset, as careers in the health professions are probably not going to be as financially rewarding as they have been in the past.^[15] Additionally, the signaling or screening theory cannot be applied to self-employed workers, as in their circumstance, they have no need to impress potential employers. Another problem is that some students who pay more for their education will get better jobs, and this theory may be interpreted as legitimizing this and ultimately presenting a barrier to the agenda of widening participation in health professions education. A significant limitation of the signaling or screening theory is its misalignment with the evidence. According to Woodhall, “the fact that age earnings profile by level of education diverge, rather than converge over time, demonstrates that employers continue to pay educated workers more, throughout their working lives, when they have direct evidence about their productivity.”^[16]

COST-OF-PRODUCTION THEORY OF VALUE

The cost-of-production theory states that the value of an output or an output’s natural price^[17] should reflect the sum of the costs of resources including labor, land, and capital that are necessary for its production. For example, in health professions education, a new output within a curriculum might be made up of faculty time, simulation equipment, and tutorial rooms within the medical school.^[18] These factors of production should be costed individually and added up to determine the value of the output. In commercial settings, a profit margin may be added to the costs of the components to make up the overall cost. The cost-of-production theory of value has the advantage of being easily understood, and it certainly seems to make empirical sense to link the value of an output to the cost of resources which were required to create it. As most of

the costs in health professions education relate to the costs of faculty, the cost-of-production theory of value overlaps with the labor theory of value (wherein the value of an output is closely linked to the necessary labor required to create it).^[19] A major limitation of this theory is that it fails to take into account the fact that the costs of faculty closely relate to the value that students place on health professions education and in turn the value that patients place on health care.

THEORY OF SUPPLY AND DEMAND

The theory of supply and demand states that the value or “price” of a health professions education program is decided by the supply of the program (cost-side factors) and the demand for it (willingness to pay). The price will thus fluctuate until, as should happen in a competitive marketplace, the supply equals the demand and equilibrium is achieved. In health professions education, the parallels are clear; assuming a perfectly competitive and commercial marketplace, if there is a great demand for a medical school place but the number of places is limited, then the market price of the education program will be high. The converse will be true also. However, the compatibility of this theory with health professions education is limited.

Health professions education is rarely if ever a perfectly competitive and commercial marketplace – apart from in the context of private medical schools where candidates are selected and progress at least partly on their ability to pay fees. In some countries, this has resulted in poor practice such as corruption and weak assessments, and this, in turn, affects both education and health care.^[20,21]

In most Western countries, there is a limit on the number of medical school places; however, that limit is not in place for commercial reasons or to create scarcity, but rather to ensure that the quantity and quality of doctors is sufficient to meet the health needs of the population. Furthermore, in most Western countries, education fees are partly subsidized by the state and/or low-interest loans made available to students. Different systems have different advantages and disadvantages; however, all are far from being pure commercial models driven by the unadulterated market forces of supply and demand. The model of health professions education which is driven solely by such forces (i.e., based on fees that suppliers are willing to accept or that buyers are willing to pay) is not one that we would wish learners or providers to adopt.

COST AND PRODUCTIVITY THEORY

A fifth theory that may offer insight into cost and value in health professions education is the cost and productivity theory. The cost and productivity theory evaluates the cost of educational institutions and the amount of productivity that can be achieved for a given cost. The relationship between cost and productivity in the context of health professions education begs questions as to variations in the costs of educating different students, what the money was actually spent on (e.g., was any of it used to

subsidize research?), and whether there might be economies of scale. Economies of scale are the holy grail of any cost economist, and yet, this concept may not be readily applicable to health professions education.

Economies of scale could help large educational institutions, mainly by leveraging their purchasing power; for example, by enabling them to bulk-buy books, e-learning resources, or simulation equipment.^[22,23]

However, there are many reasons why the concept of economies of scale might not be applicable in this context. A modern theme in health professions education is personalization of education to meet individual learner’s needs – yet, economies of scale will do nothing to further this. Another modern feature in health professions education is toward more small group work and simulation, and yet these innovations cannot happen in bulk. In fact, far from driving economies of scale, increasing the size of institutions might have the opposite effect – driving diseconomies of scale. Large institutions sometimes suffer from duplication of activities, burgeoning bureaucracies, and institutional sclerosis that make them slow to respond to user needs. Economies of scale driven through productivity are superficially attractive, but their pursuit may be both quixotic and counterproductive.^[24]

CONCLUSIONS

A number of theories are available that can underpin our thinking, research, and practice in the field of cost and value in health professions education. As noted above, theories offer different lenses to examine the different natures and complexities of phenomena. As a result, each of the theories discussed above will offer differing (and sometimes complementary) perspectives in the nature of cost and value in health professions education. None are a perfect fit – largely because of the complexity of this form of education and the different perspectives that different stakeholders have on cost. Some of the theories overlap with each other; for example, the human capital theory and the theory of supply and demand – insofar as human capital is a resource that is subject to the forces of supply and demand. The delivery of health professions education also requires investment in facilities, equipment, estates, and many other components; however, this article does not explore in detail theories related to these requirements. Most of the costs related to health professions education are associated with people, and the theories in this article concentrate mainly on learners and teachers. Many of the theories outlined relate as much to workforce development economics as they do to health professions education economics. This is unsurprising as many of the relevant learners are also working as they learn (e.g., postgraduate trainees).

The human capital theory is perhaps the most cited theory within educational economics and is likely to be most relevant to health professions education economics. This theory is easy to understand, has evidence-based foundations, and can

be applied in a variety of settings. However, the complexities of health professions education make its application to this field problematic. The human capital theory is based on the assumption that learners in the health professions act only as rational economic units and that health professions education is a free market. However, we have seen that learners can act in irrational ways and health professions education is far from being a free market. Completely free markets are not really all that common in any case; for example, free markets often lead to big providers acquiring small providers, which leads to monopolies, which, in turn, leads to state intervention to regulate free markets. The screening theory has some face validity, and its one undoubted advantage is that employers who use methods based on this theory do not have to set up expensive processes to assess potential employees. However, it is not supported by the evidence and may be a poor “fit” with health professions education. The reason for this is that health professions education is more than just about obtaining qualifications to obtain a career: for example in the UK, trainees in general practice have traditionally been called vocational trainees – reflecting that general practice is quite simply more than just a job. The cost-of-production theory of value makes empirical sense, but in actuality, most of the costs of health professions education relate to faculty: the cost of faculty is related to the perceived value of the education and to the cost of health care. Thus, this theory does not correspond with the reality on the ground in health professions education. The theory of supply and demand works best in a perfectly competitive commercial market place. However, health professions education is not such a marketplace nor do most stakeholders wish it to become one. The cost and productivity theory can help with some aspects of health professions education, but may not help with others. For example, an evaluation of education from a cost and productivity perspective might reveal that some funding intended for medical education might be being spent on research. This poor practice will result in cost but little productivity or at least little intended productivity. In this way, the cost and productivity theory can help us analyze certain problems in health professions education. However, this theory may suggest economies of scale, which are less likely to be applicable to health professions education. Put simply, schools of health professions education are not factories.

Theories that relate to cost and value in health professions education should influence research methodology and practice in this field. In turn, research findings should feed our thinking about theory and should enable us to develop more profound theoretical underpinnings of our research. Thinking about cost on the one hand and education and health care on the other hand can at times feel like an uncomfortable juxtaposition. Some can feel like apostates for even thinking about concepts that are not in the humanistic tradition of health care and education. However, this thinking is necessary if we are to achieve value for our investment in health professions education and if we are to justify the ongoing investment.

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