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To extract or not to extract – Felicific calculus to the rescue

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ABSTRACT

Contestations about the most appropriate clinical intervention and preferred treatment modality remains a serious challenge in dental practice. Dentists must straddle a delicate line between coercion, medical paternalism and respecting patient's interests and concerns. This paper explores a moral debate using a dental extraction case study, and felicific calculus as a tool for joint decision-making. We argue that this instrument offers an invaluable opportunity for building rapport and mutual engagement. Additionally, recognition of patient's preferences must also be considered in the proposed clinical intervention to inculcate a sense of ownership of the interventions proposed for and by the patient. It is argued that, this will instill a sense of shared-decision making in the interaction between the patient and the clinician.

Keywords: utilitarianism, hedonism, felicific calculus, dental extraction, ethics, shared decision-making

INTRODUCTION

Dental extractions are the standard treatment for dental pain in most poor to developing countries including South Africa.[1] Several reasons have been advanced for this widespread occurrence. First, the public oral health services in these regions are under-resourced to offer appropriate alternatives.[2] Second, regrettably, some dental professionals refuse to provide the necessary complex restorative dental interventions. Third, unfortunately, a significant number of patients still believe that dental extractions are by far the most effective treatment for dental problems including pain. Fourth, the demand for extractions has been socialised and deeply entrenched in some communities. This phenomenon is proving very difficult to dismantle and reverse.[3]

The literature indicates that dentists are occasionally 'forced' to provide dental extractions for religious, financial and cultural reasons.[4,5] Acceding to such requests can be deemed unethical and not based on established best practice or common standards of care. Notwithstanding the immense pressure placed on dentists, it is 'inexcusable' to extract teeth without due consideration of the physical, emotional, social and health implications of this irreversible procedure, to the affected patient(s). It is incumbent and prudent for dental practitioners to evaluate and discuss the degree of good, or happiness or utility that dental extractions can confer, before undertaking the procedure.

This paper explores the moral basis for the provision of dental extractions, with specific emphasis on the utility of this procedure. In other words, it seeks to elucidate whether dental extractions maximise the attainment of pleasure and minimisation of displeasure. Pertinent questions to this moral debate include the following: (i) whose utility matters or whose happiness is paramount? (ii) how is the utility of dental extractions estimated? (iii) is the measure used for this estimation appropriate? In other words, should the enumeration of utility be based on the clinician's normative needs or patient's needs and preferences or both? When confronted with a conflict of these interests, which is often the case, how should this moral dilemma be resolved?

CASE STUDY

A 36-year-old patient requested extractions of several teeth from Dr. Mogale, who was unwilling to perform the procedure. Mrs. Morake's oral health status is overall sound, with restorable dental cavities and a mild periodontal inflammatory condition that is reversible. The patient's dental history includes previously failed endodontic treatment and subsequent extractions of unrestorable teeth. She does not use the dentures she had previously made anymore. Dr Mogale referred the patient to a colleague (Dr. Mothudi) based about 85 kilometers away, who was willing to accede to the patient's request.

Brief Review of Utilitarianism

Utilitarianism is a consequentialist moral approach, rooted in the belief that moral rightness is dependent on the consequences of the act or rule and nothing

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else.[6] This philosophical view emphasises the maximisation of benefits or outcomes. As Bentham and Mill advocated, an act or rule is morally right, if and only if, it results in 'the greatest happiness for the greatest number'.[7] According to consequentialism, actions are mere instruments for doing good, thus are intrinsically neither right nor wrong. Given that actions are morally neutral, it is prudent to judge actions as being more or less efficient or useful in bringing about good or an amount of utility, than to assign them moral value.[8] Strict utilitarians believe that moral judgement should be passed on the outcomes or consequences of actions insofar as they maximise happiness and minimise unhappiness.

The analysis of moral questions about consequences requires clarity about the nature and the extent of the value of consequence or utility. It is hence critical to clearly define these two distinct aspects of consequences as a means to fully account for the utility of any actions, programs or policies.

First, the nature of the consequence, seeks to elucidate the following questions:

1. Are the consequences actual, probable, hypothetical or foreseeable?
2. Are the consequences directly due to the act or indirectly due to the rule or practice that incorporates the act itself?
3. Does the action result in the best or satisfactory outcome or a mere improvement?
4. Do these consequences represent total or net good versus average good?

Second, the extent of the consequence, which represents the total amount of utility, or the cumulative sum of pleasures experienced by an individual or groups due to a specific action. A specific question to address this aspect is whether the action applies universally to all persons or is confined only to an individual? This lack of clarity on the nature and extent of the consequence could invalidate the quantification and evaluation of the utility of the consequences. Consequently, the rightness or wrongness of the action(s) and its propensity to maximise utility could be misrepresented. These two aspects of consequences constitute the value or utility of the action. This is by far the most debatable and difficult concept to formulate and measure.

Conceptualisation of utility

Several formulations of utility have been proposed giving rise to diverse accounts of utilitarianism. The earliest and simplest formulation of utility encapsulates the hedonistic nature of 'happiness' or good. The ethical theory of hedonism, purports that pleasure is the highest good, which is intrinsically valuable than pain. Therefore, causing happiness and minimising pain maximises utility of an action – hedonistic utilitarianism. According to Bentham *'Nature has placed mankind under the governance of two sovereign masters, pain and pleasure. It is for them alone to point out what we ought to do, as well as to determine what we shall do. On the one hand the standard of right and wrong, on the other the chain of causes and effects, are fastened to their throne'.*[9,10] Bentham further describes the value or utility *'as the property of any object, or act or policy to produce benefits, advantage, good or happiness. At the same time, the act will prevent suffering, pain, evil or unhappiness to an individual or communities*.' [10]

Under any circumstance, what would the greatest happiness for the greatest number be? How would one's happiness or unhappiness be measured and distinguished from the next person's good or pain? The assessment of utility has largely been intuitive and subject to several formulations to develop some form of mathematical measure or calculus. The concept of hedonistic or felicific calculus remains subjective, difficult to enumerate and standardise. Economists are credited with developing reasonable measures and applications of utility in healthcare. Notwithstanding measures of program utility such as cost-effectiveness analysis, cost-benefit analysis and cost-utility analysis, contingent valuation is most preferred in measuring willingness to receive or pay for a health service based on its attributes.[11]

The contingent valuation measure estimates the value that the patient places attributes of the health system and service.[11] Most valuation methods are primarily comparative, and provide rankings of desired preferences by assigning superiority of one attribute compared to another. These methodologies fail to provide a direct estimate of the nature and extent of pleasure due to an action or utility. Several iterations have not rescued the development of an objective utilitarian calculus, especially about clinical care.

Felicific or hedonistic calculus

Hence to know what men will do, to tell what they should do, or to value what they have done, one must be able to measure varying "lots" of pleasure or pain. How are such measurements to be made?[10]

This Benthamian proposition is a quasi-mathematical technique used to determine the net amount of utility or good produced by an action or policy.[10] In its simplest form, utility equates to the differences in net sum of pleasures and net loss of pleasure (or suffering) due to the action or intervention. Net utility equals net utility produced minus net utility lost; happiness over unhappiness or pleasure over displeasure. To fully enumerate utility, seven aspects of a pleasurable or (un) pleasurable experience are considered:

1. Intensity refers to the magnitude or degree of pain or unhappiness experienced due to the action. The corollary is that, intensity estimates the degree of relief or happiness in the absence of painful activity or occurrence. In the case of dental extractions, intensity estimates the degree of pain relief following the extraction of the offending tooth.
2. Duration indicates how long the pleasure will last, or the displeasure will persist following the activity. In the case of a patient requiring a dental extraction, duration indicates how long the pain persists if the extraction is not done or how long the relief lasts after an extraction is performed.

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3. Certainty, appraises the probability that the pleasure will occur or displeasure abate. In other words, what is the likelihood that there will be pain relief or pleasure following dental extractions? How likely is the displeasure to continue if the dental extraction is not performed?
4. Propinquity or remoteness, indicates the proximity of the experience of pleasure or happiness following the action. It can therefore be asked - how soon after the activity will one experience reprieve from unhappiness? How soon after a dental extraction, will one enjoy a pain free, pleasurable experience? Ceteris paribus, the immediate onset of pleasure is more preferable. Similarly, the immediate relief of displeasure is desirable.
5. Fecundity or fruitfulness measures the extent to which the action will increase the likelihood of experiencing more pleasures of the same type in the future. What is the likelihood of the action producing further pleasures? Will extractions increase the likelihood of experiencing other pleasures; this could include the ability to eat, speak, associate, social interaction etc.
6. Purity is the degree to which the pleasures are not accompanied by displeasure or pain. What is the likelihood that comfort of dental extractions will result in undesirable effects or complications? What other negative consequences will be associated with the act?
7. Extent refers to the number of people who will be affected by the action. While dental extractions are performed on an individual, how many other persons are directly or indirectly impacted by the decision to extract or not to extract?

Case Discussion

The balance between the patients' interests and preferences with good clinical practice is capricious and difficult to attain, never mind entertain. Clinicians are generally determined on achieving satisfactory clinical results, despite strong objections from patients. Some level of medical paternalism can be justified in situations where patients are legally and morally incompetent. Yet, patient's preferences are generally disregarded despite demonstrable agency, all in the pursuit of quality care for patients. The above case study shows differences in the clinical judgment by two dentists. Assuming comparability in expertise, skills and experience, how can such a diverse clinical decision on the same patient be explained? The incorporation of patients' preferences to this trifactor adds another level of complexity to this clinical dilemma.

We argue in this paper that while these two diametrical opposed positions are clinically and morally defensible, they are rooted in experience; preference; predictability and the comfort of the 'tried and tested'. Such judgements are recalcitrant to the exploration of alternative viewpoints and oblivious to the concept of shared or common decision-making. We further assert that joint or collective understanding of happiness and good is plausible and possible in clinical settings. We suggest that hedonistic utility provides an alternative mechanism to resolving this eternal impasse. In this argument, we invoke the utilitarian moral argument, specifically the felicific calculus to analyse the moral dilemma using dental extractions as an example.

The Experiment

These findings represent, a pilot of ten participants (5 dentists and 5 patients) who consented to be part of this experiment and completed a questionnaire (the Hedonistic Calculus Tool) about dental extractions. The participants indicated their views about the pleasure or relief of displeasure as a result of a dental extraction. The six questions of the calculus were assessed using the modified visual analog scale. The scores of between 1 and 10 represented no pleasure to greatest pleasure ever. Table 1 shows, the mean scores and statistical differences between the two groups. It should be noted that this pilot should not be misconstrued as having achieved unquestionable statistical and methodological validity. This is a case study, using pilot data. This case study is based on real -life data, which despite its limited generalisability highlight variances in the viewpoints of dentists and patients than a fictitious case study.

The findings

Patients were on average happier with dental extractions compared to dentists: mean scores 7.30 and 5.63 respectively. This difference was not statistically significant (p=0.200). This result indicates that on average, patients prefer dental extractions, compared to dentists. Several reasons offer a cogent explanation of this phenomenon. For example, socialisation and enculturation of dental extractions, socio-economic factors, and limited treatment alternatives in under-resourced oral health services exacerbate rates of dental extractions.[12,13] The intensity of happiness or relief of displeasure due to dental extraction was significantly different between the two groups (p=0.012). Patients' articulation of pain and subsequent happiness was comparatively precise and proportionate, as it reflected their lived experience. Dentists tended to underestimate the intensity and duration of happiness (3.80 and 5.00 versus 9.00 and 7.00). It is plausible that dentists might be desensitised to the patients' experiences due to their countless clinical interactions with patients.

According to Table 1, the scores for fecundity were 6.20 and 4.40 for patients and dentists respectively. We argue that these scores show critical differences about

Table 1: Hedonistic calculus about dental extractions (dentists and patients)

	Mean score		
Felicific Calculus	Clinician	Patient	p-value
Intensity	3.80	9.00	0.012**
Duration	5.00	7.00	0.266*
Certainty	6.20	7.20	0.517†
Propinquity	7.00	7.60	0.672†
Fecundity	4.40	6.20	0.329*
Purity	7.40	6.80	0.782†
Average Score	5.63	7.30	0.200*
Total Score	33.80	43.80	0.194*

** Statistically significant * clinically different † no difference

what constitutes the positive consequences of dental extractions. For the majority of patients, dental pain is an unnecessary distraction and an impediment to achieving social, economic, cultural and other related aspects of happiness.[14] The sooner, the offending tooth is managed clinically, with assurance of long –term relief, the better for patients. On the contrary, dentists, are likely to view dental extraction along a clinical axis, without due consideration of non-clinical events. This asymmetry in the perception and experience of a clinical phenomenon could be the cause of conflict and contestation between the parties.

There was, however, consensus about the certainty and immediacy of pain relief following extractions, as well as the deleterious consequences of this procedure. These findings indicate that both parties are agreeable about the certainty of pain relief that dental extractions offer, especially in the short term. In the long term, there is commonality about the negative consequences associated with dental extractions. This is evidence of critical levels of shared knowledge and an opportunity for inclusive dialog and discussion.

DISCUSSION

Can the felicific calculus rescue this clinical and moral impasse? The application of the felicific calculus in clinical decision-making compels the patient and dentist to use the same yardstick to assess the consequences of the intended action. By focusing sequentially and intentionally on all aspects of the calculus, critical insight can be gathered on what is the actual crux of the clinical intervention. Contrary to seemingly polarised positions, evidence above suggests areas of congruence, which if jointly identified and explored can accelerate shared decision-making.

This experiment shows that there were no significant differences in views regarding propinquity and purity. From the onset, the clinician can leverage and exploit these similarities in the discussion with patients, about the best treatment modality of care. The dentist is able, from this point of common understanding, to have a meaningful, respectful and deeper engagement with the patient.

Discussions of these nature are empowering, and empathetic, and epitomise Kantian categorical moral imperative for clinicians to *"act in such a way that you always treat humanity whether in your own person or in the person of any other never simply as a means but always at the same time as an ends".*[15]

Simply put, it is incumbent on dentists "to treat others not only as means to an end but as ends in themselves".[16] Deliberate and specific patient engagement is likely to build rapport, close the dentist-patient divide, and ultimately facilitate honest and transparent discussions on clinical interventions and care. Patients who are heard respond positively to the doctor's instructions, and are likely to follow given instructions.[17] Dentists have a prima facie duty to consider the patients' concerns and preferences, with the view to incorporate them into the treatment plan. Anything less is tantamount to paternalism and a blatant disregard for true, full or sufficient patient consent.

This experiment, attempted to present a mechanism to facilitate discussions about a common clinical dilemma and polarised viewpoints. Dentists are trained to provide expert opinion about appropriate interventions, based on best evidence and other considerations. Patients, on the other hand, know best how they feel, and how the treatment works in the absence of the dentist. It is incumbent on clinicians to consider the non-biological basis of the effects of the interventions they provide, more so, the non-clinical consequences of these interventions that the patients might not prefer. The basis of this ethical discussion is based on the pilot of 10 participants which could render the study susceptible to random error. In defense of this research work, the authors, are making moral assertions and not a purely quantitative argument.

CONCLUSION

The use of a felicific calculus in clinical practice can offer valuable insights, by highlighting the biases that clinicians and patients have about the proposed intervention(s). Deliberate interrogation of the felicific calculus findings can serve as a starting point for respectful and mutual discussion about the most appropriate treatment, which incorporates clinical and non-clinical factors. The fusion of mathematics and morality may be used successfully in resolving weighty clinical dilemmas.

Conflict of Interest

All the authors declare that the study was conducted in the absence of any financial relationships that could be construed as a potential conflict of interest.

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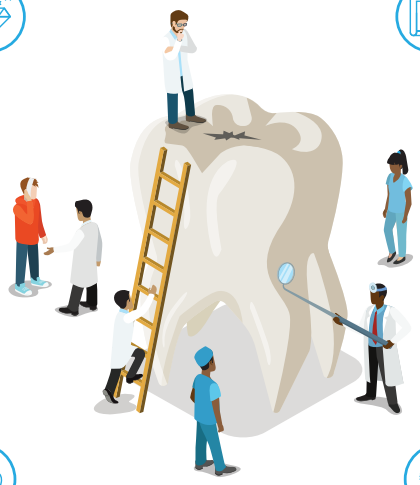

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