Viewing dressing evaluation through a pragmatic lens: the application of Dewey's experimentalism in the development of evidence for dressing selection

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Experimentalism in the development of evidence for wound dressing selection

Keywords: Dressings, Evidence, Philosophy, Pragmatism, Dewey, Experimentalism.

Abstract

Rationale, Aims and Objectives: The aim of this paper is to: (1) summarise the challenges with developing evidence for dressing selection in wound care; (2) discuss the limiting influence that the Evidence Based Practice movement has had in this field; (3) discuss the opportunities offered by Dewey's theory of experimentalism as a pragmatic solution to develop a structured body of evidence.

Findings: Whilst the number of dressings available on the market continue to proliferate, limited progress has taken place to develop a methodology for dressing evaluation that is relevant to clinical practice. It is proposed that experimentalism can be operationalised with a mixed-methods approach that may include; (a) medical histories and patient's stories; (b) participant observation and informal interviews; (c) a comparative study between a new dressing and standard care; (d) a patient's satisfaction survey; (e) a staff survey; (f) a cost examination and (g) an evaluation of the packaging and procurement route and finally (h) a clinical meeting to triangulate the data and reach a consensus.

Conclusion: Experimentalism offers a framework for the construction of evidence used for dressing selection. Central to this concept is the integration of experience to the data collected. The context of the evaluation has equal weight to the data thus collected.

Introduction

Wound care is developing into specialised field in its own right; in order to deliver wound care, dressings, which are classed as medical devices in the UK, have to be selected from an extensive range. In a climate of austerity and limited public funds, competition is seen as a positive driver to limit costs. This has led to a multiplication of dressings and an expansion of a lucrative market, with a turnover estimated at 1bn (1).

By law, wound care dressings are listed under a section called Medical Devices (3), alongside items such as urinary catheters, nasogastric feed tubes and so on. What this means in practice is that wound care dressings are CE marked [Conformité Eurpéenne] and safe to be used in the context for which they have been designed for, but the manufacturers are not required to fund efficacy studies to sell the product. Developing a body of evidence for dressing selection is fraught with methodological challenges. This includes a difficulty to control all variables associated with co- morbidities; calculating sample sizes to achieve statistical significance; recruiting enough patients that meet the inclusion criteria (i.e. with sufficiently similar comorbid profiles); challenges with validating infection, inflammation and wound sizes; and challenges with validating subjective assessments such as comforts and user friendliness(4). These difficulties have been discussed in further depth elsewhere (4) and it is not the purpose of this paper to revisit these issues. Suffice to say that the paucity of empirical evidence to support dressing selection is well recognised (5, 6) and evidence for dressing selection is said to be unable to provide clear clinical guidance (7).

This might be true when one looks at dressing evaluation from a positivist stance, which favours the value-free approaches of the Evidence Based Practice (EBP) movement. As a concept, EBP was meant to offer the integration of individual clinical expertise with the best available clinical evidence from systematic research (8, 9). Sackett's original vision (10) was the integration of clinical expertise, patient values, and the best research evidence into the decision making process for patient care. The widely view is that EBP has become to signify a clearly articulated hierarchy of scientific evidence based upon study design, where trial methodologies are regarded as the most scientifically rigorous method of evidence generation (11, 12) but remains the basis for the development of healthcare policy and practice (13,14,15). EBP no longer values clinical experience and patient values.

The debate regarding the value the impact of EBP in healthcare is not new (16) and is persisting within a movement that unites academicians (17, 18, 19, 20) with clinicians (21, 22). Some of these critiques are in wound care (23, 24, 25) with regards to dressing evaluation, the issues surrounding EBP have been debated at wound care conferences (26).

Whilst there are almost no trial methodologies based studies that assist clinicians to select one dressing over another, there are a large numbers of case studies, ideas, editorials and

opinions based on clinical experience and adherence to the demands of the EPB movement does not allow these to inform clinical guidance. Madden (27) observed clinicians critiquing EBP for being an *"obstacle to innovation and a remover of clinical solutions",* a view held by many. Nonetheless, what has not been debated in the literature is a proposal for a different perspective: what if we looked at dressing evaluation through a pragmatic lens instead?

This paper sets out an argument which offers a starting point for an ontological debate that moves beyond the widely held, but somewhat narrow conceptualization of EBP that derides the relevance of clinical experience to a more pragmatic ontology which reflects the reality of what we already know to take place with regards to evaluation of dressings in clinical practice. It makes a case for adopting Dewey's experimentalism where structure is given to our clinical experiences to produce humanistic evidence that is relevant to clinical practice, as clinicians do not treat wounds by trial evidence alone but require other forms of information which address different aspects of patient care, often overlooked by the current EBP approach. Furthermore, it does not allow for different types of evidence to inform clinical guidance. This paper advocates a return to the early vision of EBP, where clinicians' cumulate experience, education and clinical skills that are integrated with each patient's preferences and unique concerns, expectations and values; the best research evidence is to be found in clinically relevant research that had been conducted using structured methodology but significantly, not necessarily trial based, as all information gathered is equally desirable, should be considered and done so in context. The reality of wound care is that the knowledge and experience of the person delivering care impact on the care that the patient receives and how the dressings are changed and evaluated. This process necessarily starts with an exploration of the philosophical perspective that is adopted *before* selecting appropriate methodologies.

Pragmatism as a philosophical perspective

The relationship between a researcher and philosophy is a reflection of how one views life and how dominant this view is transmuted into one's work (31). From an epistemological point of view, the idea that knowledge comes from experience is known as empiricism (32) and according to that way of thinking only what is experienced with our five senses is knowledge that can be proved or disproved by observation, experiment or experience (33). The EBP movement has embraced a positivist view of knowledge, which stipulates that the only truth that exists is that which can be known through empirical data collection (34). This focuses on measurements, observations and experiments and dismisses personal experience as too challenging to capture in a way that conforms to the evidence hierarchy.

Research in health has been dominated by empirical research based on quantitative data collection, development of diagnoses, intervention strategies and quantifiable outcome measures (35). Facts and figures are what matters in this philosophical perspective.

Constructivism, on the other hand, asserts that there is no objective truth waiting to be discovered [36] and truth comes into existence in and out of our engagement with the realities in our world. Our experiences are set in a specific context, "e*xperiencing means living; and living goes on in an environing medium, not a vacuum"*[37], where meaning cannot be discovered but can be constructed. Constructivist methodology focuses on experience and dismisses observations and experiments as too reductionist and therefore lacking the connection with the 'environing medium'.

Pragmatism emphasises the existence of a real world separate of our observation of it, but highlights that our empirical approach to the world is shaped by our experiences. Truth can thus be discovered *and* constructed and this paper argues that the world of dressing evaluation can be viewed with a pragmatist lens. Immersed in the work of Dewey, his philosophical beliefs have shaped and framed this work and constructed a reality that allows for a different methodology to be developed for dressing evaluation.

Wound care and dressing selection rely on more than a list of facts that is waiting to be discovered. Orthodox enquiry struggles to provide a definite indication about which dressing provides optimal treatment in complex wound care as *"bodies arrive for treatment in quite different states of repair"* because *"they are controlled by capricious, wilful human agents"* [38]. Each patient has a number of risk factors that, added to the heterogeneity of clinicians' skills and techniques, gives too many variables to *discover* if dressing A will be better than dressing B and this is more than a simple limitation in the researcher's skills. But, it can be argued, experience can *construct* a reality where dressing A performs better than dressing B within a well-defined context.

The possibility of releasing knowledge that is locked within experience is exciting and particularly befitting clinical practice and research traditions. Neubert [39] agrees that human beings grow up and live in life-worldly contexts long before they begin to think about their lives and contexts. Life-experience, says Dewey is "*already overlaid and saturated with the products of the reflection of past generations and by-gone ages*" [40]. He further explains that "*it would take more wisdom than is possessed by the wisest historic scholar to track all of these absorbed borrowings to their original sources"* [40]. One can never be truly objective in dressing evaluation, as our personal experience does interfere with the process; truth as a single entity does not exist but needs to be continually revisited in a way that is context sensitive.

Constructing realities

Constructivists see humans as observers and participants who actively generate and transform the patterns through which they construct events [41]. Constructivists remain open to experimental learning [36], but learning that includes clinical experience rather than just experiments [42]. Experiments are limiting and limited by their design. Constructivism,

like other approaches looks for methodological procedures, logical accuracy and unambiguous analysis of preconditions and consequences. Constructions are subjective and depend on the unique and concrete perspectives of observers and participants [41]. These constructors are embedded in the social and cultural conditions of their time [43] and what remains as truth is only temporarily valid within a certain context.

Dressing evaluation needs to be underpinned by a philosophy that is multifaceted, encompassing the biological, physical, psychological, emotional, cognitive and spiritual dimensions of patients and their wound, as well as the contextual economic and socio-cultural environment that influence decision-making. Greene [31] joins Johnson and Onwuegbuzie [44] in proposing pragmatism as an alternative constructivist philosophical perspective.

Pragmatism

Pragmatism was developed from the writing of Peirce (1839-1914), James (1842-1910) and Dewey (1859-1952) [45]. Dressing evaluation, a subset of wound care, stems from the development of the first modern dressing in the early 1980s with Granuflex™, the first hydrocolloid dressing [46]. It becomes clear why the speciality identity is only beginning to emerge.

In the absence of deep traditional roots, pragmatism offers a way to be guided by the future rather than the past. Pragmatism tests beliefs by examining their consequences or more accurately what happens when the beliefs in question are acted upon [47]. As it looks to future consequences rather than past causes, pragmatism argues that a belief is meaningful only if its adoption changes the future.

Dewey's pragmatism in dressing evaluation

Pragmatism has been described as a patchwork, emerging from the writing of three disparate sources: Pierce first, then James followed by Dewey that have very little overlap in terms of the subject matter and inquiry pattern [48]. Neo-pragmatism philosophers such as Rorty (1931-2007) differ significantly from the early writers known as the First Pragmatists [49] and therefore one must not adopt pragmatism as an umbrella philosophy without being clear on which specific pragmatic philosopher's views one has affinities with [31].

John Dewey (1859-1952) was an American psychologist, philosopher, educator, social critic and political activist. Dewey made seminal contributions to nearly every field and topic in philosophy and psychology. Besides his role as a primary originator of both functionalist and behaviorist psychology, Dewey was a major inspiration for several allied movements that have shaped 20th century thought, including empiricism, humanism, naturalism, contextualism, and process philosophy [28, 50, 43]. Dewey's notion of education as growth, as a process facilitating individual development and as a problem solving activity has shaped

clinical education (especially nursing) over the last thirty years [51] and thus the idea to bring his philosophy to dressing evaluation is most appropriate.

Dewey defines inquiry as the transformation of a situation; he identifies the topic of the inquiry as the conditions upon which the occurrence of qualitative experience depends on experimental, instrumental knowing and explains that truth is simply a process of verification. As there is no dichotomy between subjective and objective views, experience is both and neither and it is the reflection on the experience that produces knowledge. Dewey's perspective rejects the idea that science and practice are different in an epistemological sense [29].

Pragmatism is well versed to the discipline of dressing evaluation because it embraces the physical science philosophy (in which the domain of inquiry is objectivised and reducible) with the social and human aspect where knowledge is relative and contextual [52]. With Dewey's pragmatism, the basic assumption of knowledge construction departs from the classic view of subjectivity and objectivity, where science is purely concerned with knowledge and practice, where those are based on action. The evaluation of dressings should be based on both subjective and objective insights. The subjective aspect concerns itself with how a dressing 'feels when touched'; whereas the objective view focusses on whether a dressing achieves what it is supposed to achieve, in for example reducing odour, infection or promoting granulation. In Dewey's terms, dressing evaluation should construct knowledge in interaction with practice.

Dewey [40] articulates five logical steps that should be present when "*good thinking"* is encountered. First of all, there must be a difficulty, as if no problem is present there would be no need for inquiry. Identifying a problem in wound care prior to undertaking a dressing evaluation is challenging as the nature of the problem could be real or perceived. Dressing manufacturers employ marketing strategies to create a 'need'[53] and as dressings can be sold without being subjected to rigorous trials, the issue of identifying a real clinical problem in wound care is critical to good dressing evaluation.

The second logical step identified by Dewey is that the problem must be located and defined. Much of the work of solving a problem lies in the successful completion of this step. In wound care, a real problem could take the shape of patient's dissatisfaction with a dressing resulting in poor concordance; another real problem is adherence of dressings to a wound bed, causing trauma and pain at removal; the cost of dressing regimes is another recurrent reason for looking at different products [4]. The third step is the suggestion of a possible solution and in wound care there are a number of dressings that could be used to solve the problem for each situation. The fourth step is a reasoning process that eliminates a number of options. At this stage of thinking, Dewey explains that some of the solutions are discarded as being impractical.

Finally, there is additional experimentation or observation that is required for the leading solution to be either accepted or rejected. The process of inquiry is complete until the next doubt or problem ensues and in dressing evaluation this stage could return every few months as a different dressing, with slightly different characteristics, is being produced, which may perform better than the one that has just been evaluated.

Experimentalism

Dewey is committed to experimentalism but this does not lead to findings which result in a linear, certain, clear cut solution. As everything that is known or knowable exists in relation to other things, there is no such thing as an absolute value, because what is valued is often subjective or relative (28). The test of an idea is its outcome and the test of an outcome is whether it resolves a problematic situation in a satisfactory manner with the understanding that the solution may only be temporary and the issue may need revisiting.

Dewey's understanding of the notion of inquiry is applicable to dressing evaluation, where wound care is non-linear, uncertain, complex and conflicting. Dewey argues that a pragmatic inquiry aspires to contribute to workable solutions and in order to do so any method may be used depending on the situation at hand.

In clinical practice and especially with dressings, we modify our techniques to the environment we are in, to the patient we look after (their living requirements), to the staff we work with (skills and abilities), to the materials we have available. Experimentalism becomes a fluid entity, what is right today may not be right tomorrow.

Experience in experimentalism

Dewey believes that knowledge construction emerges from human beings having experiences in a social context. Knowing is something that occurs as we live and in the contextual situation in which thinking occurs. Knowing in dressing practice emerges as an adaptive activity along with several of knowing's most important patterns: doubt, belief, inquiry and judgement (50) which experience gives us. It is in clinical experience that one finds patterns of inquiry and logic useful for ordering and directing future events (28). Dewey explains that knowledge is a quality that brings experience from *that* specific experience (i.e. *that* wound, *that* dressing change, *that* skin reaction) and which is constituted by a single quality that pervades the entire experience and reflects on *that* quality that gives the experience momentum. The qualitative character of experience is neither subjective nor objective, it simply occurs but when connected by reflection, it becomes a reference, an anchor in time. Clinical experience that relates to a particular context has added importance because wound care is often undertaken in a complex adaptive environment in which there is tacit knowledge that exists beyond formal knowledge system.

As wound care clinicians, we can identify with these words: *that* patient with *that* wound sticks in our mind more than the thousands of patients we might have looked after during our careers. As we proceed from novice to expert, Benner (54) explains how we progressively gain the ability of recognising patterns on the basis of deep experiential background with one of the key aspect of the expert's practice has been described as having a clinical grasp and resource-based practice. Experience in the Deweyan sense is characterised by continuity and interaction and in its most comprehensive sense, experience means the sum of life-experiences, a life-career of individualised activities and learning processes that each in turn contribute to the quality of subsequent experience. When we are involved in such problematic situation, it demands inquiry into constructive elements in order to resolve the problem at hand. Dewey makes it clear that this is a process of construction that implies a circular logic of reflection.

Experience is experimental, practical and quantitative in nature (28) but it is also historical, and moves to the future, there never will be an end to experience or a finality of knowledge. Dressings are a medium for invention and tailored care to each patient and in clinical practice, we never cease to be surprised how inventive colleagues can be when redressing wounds, which means that some dressings are used in ways far removed from anything the manufacturers had ever anticipated. This requires observation and interaction with patients and colleagues. The cultural diversity, the attitudes to wound care differ from ward to ward depending on the speciality; an experienced medical nurse for example, has a very different attitude to wounds than an experienced surgical nurse, partly due to the exposure to those wound care skills but also by their individual personalities, their philosophy of life which attract one nurse to a speciality rather than another. Whist this is could be explored in more details, what is important is that this individuality has to be captured in dressing evaluation, not as a single entity but as a collective ideology and form one aspect of many of a pragmatic dressing evaluation.

A philosophy that believes that clinical practice and experience produces knowledge and that this could be academically accepted is a breakthrough for dressing evaluation, in so far that the two fundamental assumptions that underpin Dewey's philosophy are the core rationale for dressing evaluation. There is a *melioristic* belief that although there cannot be guarantees that the enquiry efforts will make the situation better, the improvement of the situation is a real possibly. The aim of any dressing evaluation is melioristic as its fundamental aim is to improve conditions, be it healing, odour control, pain at dressing change, or provide better aesthetics for the patient or to reduce costs. There is an understanding that one may get it wrong but even so, it will offer learning experiences and ultimately knowledge. Therefore, there is the possibility of *growth* by learning from our mistakes (50).

This last aspect is so liberating. McGee [55] points out that a pragmatic and experiential approach to problem-solving relieves clinicians from the destructive pressures they feel subjected to in order to arrive at a final and conclusive answer. Criticism and condemnation becomes irrelevant once decision-making is undertaken with a pragmatic lens, with its integral acceptability that any present solution may need to be revisited in the future. Far from being an attitude of compromise and accommodation, Dewey's philosophy is constructivist and critical, where self-reflection is critical of the results that emerge.

Operationalising pragmatism

Dewey's commitment to experimentalism leads to a structured approach to inquiry, where practice and clinical experience produce knowledge that aims to improve conditions for patients (melioristic) and accepts our fallibility and opportunity for growth. Such philosophy needs a pragmatic methodology with a set of methods that allows for the process of learning from experience in practice, within a well-defined context. Designing a pragmatic dressing evaluation requires the use of a number of methods. For example, in a mixed-method study undertaken by the first author's clinical practice[56], eight different methods were used to evaluate a dressing used to dress wounds that surround orthopaedic devices. For this study, ten patients, thirty-one nurses; one orthopaedic surgeon and five trauma sisters were recruited to different elements of the study. The design of the study included: medical histories review and patient's stories recording; participant observation and informal interviews; a comparative study between a new dressing and standard care; a patient's satisfaction survey; a staff survey; a cost examination and an evaluation of the packaging and procurement route and finally a consensus meeting. The data yielded from these eight methods were analysed and the results triangulated. Whilst the aim of this paper is not to demonstrate the rigour of the above study, it offers an example of an alternative structure to a dressing evaluation. The number and type of methods chosen would vary depending on the requirement of each dressing that requires evaluation.

With this methodology, each bit of information finds its place. The Wound Care Clinician leading such dressing evaluation becomes embedded in the study, with the recruited patients, the nurses who undertake their dressings and anyone else involved with the clinical undertaking of these patients' wound care. This methodology acknowledges that the context where the dressing is being evaluated is central to its findings.

Validity and reliability, positivist terminology for trustworthiness or rigour, are sought through a process of reflexivity, a reflection on subjectivity; a critical attitude toward the data and their representation (writing up the data); and finally the data status, standing and authority (legitimisation [57]). Reflexivity is about having the understanding of the setting, the context and culture that is specific to each dressing evaluation. Importantly, it has to be recognised that familiarity with the context requires a heightened awareness regarding any preconceived awareness [58] and thus the process of reflexivity becomes essential.

Implications for clinical practice

The outcome of such dressing evaluation is not a finite and concluding results but a passage in time: new dressings are continually developed and new cycles of experimentalism will inevitably ensue. But that is perfectly acceptable in Dewey's pragmatism. It is an evaluation that offers evidence for clinical practice in a well-defined context. It is up to each clinician to extrapolate the information and with a process of reflexivity, to decide whether it would be applicable in their own setting. This will allow clinicians to integrate their experience in the selection of wound care dressings and not feel oppressed by rigid expectations of what valid and useful evidence 'looks like' (2). Clinicians will be able to progress this emerging discipline into a field where the role of experience is not forgotten, but is instead valued and explicitly capitalised upon (20).

Conclusion

The paucity of evidence to support dressing selection is well recognised and lack of progress in this field has been summarised elsewhere (4). This paper offers an alternative philosophical perspective as a *starting point* to undertake research in the field of dressing evaluation. Dewey's experimentalism offers a pragmatic structure that values and includes clinicians' experiences and gives equal weight to the context of the evaluation as the data collected. It offers an acceptable and applicable solution to the development of evidence for some of our clinical problems and reflects the reality of wound care in clinical practice. Whist we acknowledge that this may not be the only way forward, it is hoped that it will kicks starts further ontological debates.

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