

WHY NUTRITIONAL KNOWLEDGE MAY NOT INFLUENCE DIETARY BEHAVIOUR

Abstract

Despite the increasing reliance on nutritional knowledge by health campaigns, research investigating the correlation between nutritional knowledge and dietary behaviour continues to generate conflicting findings. The reason for this variation may not be sufficiently explainable by sociodemographic differences between study subjects. Instead, it has largely arisen due to the limited understanding and poor application of the subject nutritional knowledge with regards to its domains, forms and level.

Keywords:-Nutrition, nutritional knowledge, dietary behaviour, health campaigns

Background

Nutrition is generally described as the process of intake and utilization of nutrients in the body. This process guarantees the intake of nutrients for the maintenance of health, otherwise malnutrition ensues (1). The problem of malnutrition is faced by about one billion people worldwide, who are at increased of impaired immune function and increased susceptibility to disease, impaired physical functioning and reduced productivity (2). It is hence necessary to ensure adequate nutrition, although may prove challenging without knowledge of the required nutrients. Such knowledge is necessary to guide one in understanding and applying sound nutrition principles termed, nutritional knowledge (3).

Nutritional Knowledge- Domains and Forms

Nutritional knowledge can be described as an understanding of nutrients and nutrition, a framework upon which facts are based (4). It refers to knowledge of the scope of nutrition, and like knowledge generally, it enables an individual make meaning of an aspect,

35 meeting the need for cognitive consistency and predictability (5). An
 36 example in this context is, knowing that carbohydrates are energy
 37 sources. Such knowledge is able to guide an individual to feed on
 38 carbohydrates for energy. In other words, nutritional knowledge is
 39 critical for ensuring adequate nutrition, particularly regarding dietary
 40 intake.

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 42 That said, it becomes vital to understand the aspects which constitute
 43 nutritional knowledge. Previous research makes it obvious the aspects
 44 considered to be a part of nutritional knowledge. Steenhuis, et al (6)
 45 for instance focused on the knowledge of fat, while Resnicow, et al
 46 (7) emphasised the knowledge of fat, fibre and cholesterol.
 47 Anderson, et al (8) in their research considered familiarity with
 48 nutrition terms, knowledge about current dietary recommendations,
 49 and the practical applications of these recommendations as
 50 comprising the domains of nutritional knowledge. Apparently, these
 51 knowledge areas are crucial, however seem to represent only a limited
 52 aspect of nutritional knowledge. Parmenter and Wardle (9) and in a
 53 revised version (10) have rather recommended four aspects as
 54 comprising the full domain of nutritional knowledge; dietary
 55 recommendations, sources of nutrients, choosing everyday foods, diet
 56 and disease relationship. These aspects are more comprehensive than
 57 those fore-mentioned and reflect a broader scope of nutritional
 58 knowledge, necessary for appropriate assessment of the subject, and
 59 in consonance with the psychometric criteria which ensures that
 60 scaling of psychological attributes includes the full domain of the
 61 attribute in question (11).

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 63 Conceptualising nutritional knowledge, Wansink, Westegren and
 64 Cheney (12) assert that nutritional knowledge consists of hierarchy of
 65 two forms; knowledge relating to the attributes of food and that
 66 regarding the consequences of consuming food. Another study (13)
 67 describes two forms of nutritional knowledge; knowledge of nutrient
 68 functions and knowledge of nutrient sources. Obviously, the

knowledge forms indicated in both studies represent the knowledge of nutrition facts, which may be termed as declarative knowledge. Worsely (4) recognizes this form of knowledge though asserts that nutritional knowledge may as well occur as procedural knowledge. While declarative knowledge describes the knowledge of facts and information, procedural knowledge refers to the knowledge of how to perform a certain task. For instance, knowing that glucose is a source of energy is declarative knowledge. On the other hand, knowing how to choose fresh leafy vegetable, rather than high-fat food product is procedural knowledge. Bruning, Schraw and Ronning (14) claim that declarative knowledge exists before, and is translated into procedural knowledge. Thus, to consciously choose a healthier snack, one needs to have knowledge of what makes it healthier than other alternatives (declarative knowledge), which is able to prompt making choices requiring the know-how (procedural knowledge).

The Role of Nutritional Knowledge in Dietary Behaviour

The subject of nutritional knowledge has attracted a great deal of attention in recent times, evidenced in its frequent use in health campaigns to influence of dietary behavior necessitated by the present nutrition transition (15,16). To a large extent, this has been supported by studies attesting to the influence of nutritional knowledge on dietary behavior (17,18,19,20). Other researchers have arrived at inconsistent findings querying the strength of this relationship (21,22). Assuming a unique view, Worsely (4) claims that nutritional knowledge is necessary but insufficient to influence dietary behaviour. These disparate views create pockets of skepticism regarding leveraging nutritional knowledge to influence dietary behaviour in health interventions. Given the doubtful role of nutritional knowledge in dietary behavior, other factors influencing dietary behavior have been proposed. Baranowski, Cullen and Baranowski (23) for instance, posit that factors such as perceived consequences of behavior, beliefs and attitudes, skills, confidence and motivators influence dietary behavior. Although they also acknowledge the role of nutritional knowledge, they seem to agree

with the views of Worsely (4) regarding the strength of its influence. Considering that nutritional knowledge may not be the only factor able to influence dietary behaviour, their claim is plausible but appears to undermine the full implication of nutritional knowledge.

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A critical consideration of the factors proposed by Baranowski, Cullen and Baranowski (23) reveals that they are fundamentally reliant upon nutritional knowledge (or are inseparable from). For instance, the perceived consequences of engaging in the dietary behaviour stressed by the health belief model and theory of planned behaviour (24), describes what the perpetuator stands to gain or risk by the behaviour. Regardless of how accurate, such perceived consequences are usually subject to some level of knowledge gained through information. It is this knowledge that plays the key role in shaping perception (25). Furthermore, knowledge of certain kind (procedural knowledge) may also equip with skill required to perform a particular behaviour (4) and help to reinforce confidence at performing a task.⁽²⁶⁾ Other factors highlighted by the model include “motivators” which may exist in form of biological needs, social influences, environmental benefits, psychogenic needs, personal and cultural values defining the moral climate surrounding the perpetuation of a certain behaviour. Such motivators are a reflection of individuals’ shared beliefs (27), which are related to individuals’ knowledge. The concepts of belief and knowledge though contrast in terms of mental representation, are closely related. While knowledge refers to the representation of a proposition, belief is the representation of a truth-value associated with a proposition (28). In other words, belief is knowledge accepted based on how truthful it is considered to be. This implies that individuals’ beliefs are dependent on their knowledge. That said, nutritional knowledge may be considered as the framework upon which other factors influencing dietary behaviour are built or based. If nutritional knowledge is accepted as such, it bears some reassessment in order to provide some

understanding as to why its role in dietary behaviour has remained
unrecognised in some studies.

Critical Issues in Understanding and Applying Nutritional Knowledge

Some factors which may limit the influence of nutritional knowledge
on dietary behaviour are; poor conceptualisation of nutritional
knowledge, variations in information source characteristics and the
level of knowledge. These factors are discussed in more detail.

1. A major problem associated with applying nutritional knowledge is
its poor conceptualisation. A balanced assessment of nutritional
knowledge embraces all the qualities of nutritional knowledge in
terms of type and scope. Regarding scope, nutritional knowledge may
consist of domains. These domains have already been described in
detail by Parmenter and Wardle (9) to include; “dietary
Recommendations”, “diet and disease relationship”, “Sources of
Nutrients”, “Choosing Everyday Foods.” They have also claimed that
all the aspects considered together constitute comprehensive
nutritional knowledge. Actually, this broad classification has
significantly improved research into the subject of nutritional
knowledge, however seems to have failed to address the manner or
pattern of food intake among the named domains. The subjects of
meal frequency and regularity are becoming increasingly studied as
they are being noted to impact body metabolism and health. For
instance, consuming small frequent meals is suggested to promote fat
loss (29,30,31) by physiological mechanisms such as improved
glucose homeostasis, (32,33) increased thermic effect of food (34)
and appetite control (35,36). More so, since Brobeck (37) proposed
irregular meals to enhance adipose deposition due to induced low
thermic effect of food, more recent studies have observed the effect of
time of food intake on the circadian rhythm in peripheral tissues
(38,39). Studies (40,41) reveal that when humans engage in alternate
day fasting or energy restriction they show increased insulin

sensitivity, reduced insulin and leptin secretion, and increased mobilisation of fatty acids and increase ketones. The raised insulin sensitivity realised in this manner is able to result in weight loss (42). Thus, having knowledge of healthy nutrient intake patterns is critical.

Another misconception of the subject of nutritional knowledge has occurred due to limited insight into domain-specific characteristics. According to Alexander and Judy (43) in a review state that in addition to procedural and declarative knowledge, domain specific knowledge consists of conditional knowledge. Conditional knowledge involves an understanding of the time and place to access necessary facts and apply specific procedures. This form of knowledge was recognised by earlier theories (44,45), however appears to have been undermined in nutritional knowledge research. Knowing the facts (declarative) and how to apply the facts (procedural) is important, but may not guarantee successful application of such knowledge if the individual in question does not know when to apply it. A hierarchical arrangement of the forms of nutritional knowledge as suggested by Wansink, Westegren and Cheney (12) would place conditional knowledge as the third level knowledge; regulating the application and use of other knowledge forms.

Neglect of conditional knowledge is likely to be the problem associated with translating declarative to procedural knowledge. Although Worsely (4) also noted the limited translatability from declarative to procedural knowledge, failed to acknowledge the absence of conditional knowledge as a possible cause. From a biological standpoint, dietary behaviour like any other behaviour may viewed as a conscious response to an occasion presenting with a task. This can be deduced from the based on Bergner (46) review on the attributes of behaviour. For successful accomplishment of the task, the individual needs to know the facts regarding the task (declarative), how to accomplish the task (procedural) and if the situation or occasion demands the application of the facts and skills gained.

Agreeably, their judgement regarding whether or not to apply their facts and skills in certain occasions may not be accurate based on health standards, but should not be undermined since it guides their response to the task expressed as behaviour.

2. Notwithstanding the necessity of the three forms of knowledge, an individual may yet fail to successfully perpetuate specific dietary behaviours due to inaccurate nutritional knowledge gained from invalid sources. For instance, an individual who imbibes information of the harmfulness of a certain food is likely to be skewed against consuming such food. Similarly, erroneous information regarding the nutrient facts can lead to poor understanding and misuse of nutrient labels. The expanding interest in the role of food, health and wellbeing and consumers' need for nutrition information appears to have been matched with a corresponding increase in the volume of nutritional information from a variety of sources. Consequently, it has become challenging discerning the veracity of nutrition information. Since nutritional knowledge is gained through nutritional information (47,48) it stresses the need for reliance on valid sources. Despite the prevalence of nutritional information sources not all sources may be reliable. Inconsistent quality of nutritional information from media sources such as television news has already been highlighted (49,50). Diane et al (48) suggests this may be consequent upon the focus on recent dramatic and sensational news highlights rather than established guidelines for dietary moderation and diversity. As regards other sources such as the internet, newspapers and magazines, the reported variability of nutritional information and predominance of non-evidence based nutritional information has been accrued to difficulties in relating complex nutritional information by inadequately trained news reporters (51,52). Regardless of the rationale, there is need to ensure the use of valid nutrition information as it is key in shaping nutritional knowledge and dietary behaviour.

3. Some individuals may have accurate and comprehensive nutritional knowledge, but may yet find it challenging perpetuating certain dietary behaviours. Research involving such individuals may erroneously report this occurrence as the absence of a relationship between nutritional knowledge and dietary behaviour without an assessment of the level of knowledge. The term “level of knowledge” is oftentimes used in educational research literature to imply the extent of knowledge; how much of a subject a person knows, however has not been inferred in this review. Jong and Fergusson-Hessler (53) categorises knowledge based on levels into two - deep and superficial levels. Knowledge is described as deep when information gained has been understood, and translated into basic concepts, principles relating to the domain. Glasser (54) asserts such knowledge does not occur as in the original information used, and associated with critical evaluation and judgment. Superficial knowledge on the other hand lacks critical judgment, and occurs as an exact replica of the original information. This level of knowledge is similar to that which is a product of rote-learned information (54). Nutritional knowledge may be understood to exist similarly, with those of a deep level of knowledge being more apt to perpetuate dietary behaviours related to the knowledge gained.

The difference between the deep and superficial knowledge levels perhaps is due to differences in individual ability to structure learned information. Addressing evidence on the structure of knowledge in an early research, Larkin, et al (55) concludes that individuals’ understanding of information varied according to their ability to chunk information into meaningful small units. Elio and Scharf (56) observe that structuring knowledge in this manner helps for quick and efficient processing. Thus, given the same scope of nutritional knowledge, the level of knowledge may differ influencing one’s ability to perpetuate a particular dietary behaviour. Nutritional

knowledge research should consider investigating subjects' level of nutritional knowledge in relation to dietary behaviour.

Conclusion

In summary, nutrition information serves as a source of nutritional knowledge, which plays a fundamental role in individuals' dietary behavior. Nevertheless, this role may remain unnoticed if nutritional knowledge is not addressed in terms of some of its characteristics such as; form, depth and validity. Thus, nutrition education campaigns may need to re-strategise, modifying the scope and quality of nutritional knowledge employed. Furthermore, more research is needed to explain the impact of varying forms and levels of nutritional knowledge on the different dietary behaviours.

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