

Vitamin D intake in children aged 0-4: A comparison of cultural and motivational beliefs between native and Islamic parents

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Abstract

Vitamin D is very important for children in order to strengthen bones and teeth and to prevent some types of cancer and both diabetes type I and II later in life. The Dutch Health Council therefore advises to provide children aged 0-4 with an additional 10 mcg of vitamin D on a daily basis, preferably via supplements. Great sources of vitamin D are sunlight, fatty fish, eggs and vitamin D fortified foods like infant milk and dairy for children. The importance of vitamin D is not only emphasized by The Dutch Health Council but also via child health centers and on the internet. The compliance, nevertheless, is not optimal, especially amongst Islamic children which results in an insufficient intake of vitamin D by two third of Islamic children. This study aimed at exploring religious and motivational beliefs regarding vitamin D intake. It was expected Islamic religion and a bad motivation to provide sufficient vitamin D would be important determinants of bad compliance.

This thesis had an explorative-observational character and a qualitative research design was practiced. A semi-structured questionnaire was chosen to investigate the differences in beliefs. Ten native and five Islamic mothers participated in an individual interview. In order to structure the audio-taped interviews 'free nodes' were developed in the coding programme Nvivo. The 'free nodes' were based on the concepts of the theoretical framework. Examples of the 'free nodes' were 'knowledge of advantages', 'severity of insufficient consumption' and 'religious beliefs'. The tree map retrieved from Nvivo showed the different beliefs per concept of the questionnaire and improved the comparison.

Both groups had limited knowledge about the (natural) sources of vitamin D and most participants were not able to mention health benefits. Islamic participants used sunscreen

less often than native participants did because of less fear of sunburn and skin cancer. Islamic participants indicated Islamic beliefs did not reject the provision of supplements, fortified foods or sunlight exposure to children. Both groups mentioned to provide their child(ren) with any kind of fortified food although some participants rejected the great amounts of sugar in dairy for children a preferred low-sugar dairy without added vitamin D.

The main difference in beliefs regarding vitamin D intake between native and Islamic mothers is related to the high frequency of sunscreen and greater feelings of anxiety and guilt if child(ren) would be unprotected amongst the native mothers. Islamic beliefs could justify the consumption of supplements; fortified foods and exposure to sunlight in order produce vitamin D. The limited level of knowledge about the sources and effects of sufficient vitamin D intake could be a reason for improvement of the communication and information on vitamin D provided in a child health center. This investigation could be improved by a focus group interview in order to stimulate discussion and furthermore be complemented by a quantitative questionnaire to gain more information about the amounts and frequencies of vitamin D consumption and sunscreen use.

Keywords

Vitamin D advice, compliance, motivation, knowledge, beliefs, anxiety.

Introduction

Vitamin D is very important for children in strengthen bones and teeth and could even prevent some types of cancer, diabetes type I and II and bone fractures later in life. Since vitamin D is not provided sufficiently by the natural diet of most children 0-4, the Dutch Health Council and WHO advices to provide these children with an extra 10 mcg of vitamin D on a daily basis (Holick, 2004; Hyppönen, Läärä, Reunanen, Järvelin, & Virtanen, 2001). Vitamin D can be consumed via different sources. It can be consumed via natural foods like: fatty fish (like salmon and herring), eggs and to a lower extent, via dairy products like meat (Ross et al., 2011). Another natural source of vitamin D is sunscreen and also vitamin D fortified foods for children like dairy and margarine, are widely available in The Netherlands. A fourth source of vitamin D are supplements (pills or drops). Although the importance of sufficient provision of vitamin D to children aged 0-4 is evident, L'Hoir, Boere-Boonekamp, and Nawijn (2009), found that only one in three native children and half of foreign children are provided sufficient levels of vitamin D on a daily basis. Important determinants of non-optimal compliance to the health advice are unawareness about the importance of vitamin D and a lack of knowledge about natural sources of vitamin D.

Moreover, foreign parents were less convinced of the need to provide sufficient vitamin if the health advice was given via a child health center instead of a specialist and/or vitamin D products would be covered by a health insurance (L'Hoir et al., 2009).

Theoretical framework

In order to explore and explain health behavior like the (non-)compliance to sufficient vitamin D provision, a theoretical framework, The Protection-Motivation Theory of Rogers (1983) (see figure 1), was applied. This theory generally distinguishes two different behaviors of people: the behavior which protects health (adaptive response) and the behavior which does not protect health (maladaptive response) (Floyd, Prentice-Dunn, & Rogers, 2000). In this study, the adaptive response is compliance to the health advice and the maladaptive response is non-compliance of parents. The compliance to the health advice is considered by parents of behalf of the "costs" that are inherent to the provision of sufficient vitamin D. These "costs" could be financial (the costs of supplements), instinctive (parents do not want to force children) etcetera. These costs are influenced by a feeling of parents of being able to be compliant (self-efficacy) and by the perception of parents of the advantages of providing sufficient vitamin D (response efficacy). The maladaptive response is influenced by the degree of experienced fear parents have for their children when vitamin D is not provided sufficiently. This fear is provoked by feelings of vulnerability (do parents think their child has a great chance of bad health?) and severity (how severe are the health consequences of non-compliance?). Intrinsic and extrinsic rewards could, subsequently, decrease or increase the feelings of severity and vulnerability (Floyd et al., 2000). An intrinsic reward could be a feeling of not forcing a child to consume something he/she does not want to, which is likely to decrease the feeling of both severity and vulnerability. An extrinsic reward could be the approval of a nurse in a child health center, which is likely to again decrease the feeling of severity and vulnerability. This theoretical framework will also be applied in the result section in order to code answers and in the conclusion in order to distinguish the importance of different factors.

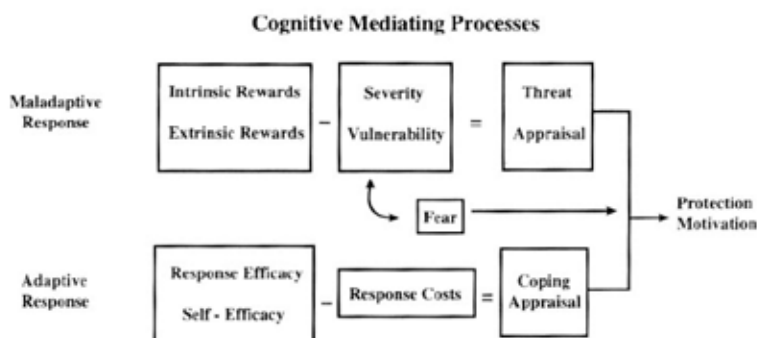


Figure 1: The Protection-Motivation Theory (Rogers, 1983, pg 410)

Relevance and research question

It is evident that the provision of sufficient vitamin D to children is not-optimal. Furthermore, another health advice like the prevention of sunburn in order to prevent skin cancer interferes with the health advice of vitamin D because use of sunscreen prevents vitamin D uptake via the skin. If parents try to provide their child(ren) with sufficient vitamin D via dairy products for children, children would consume relatively high levels of sugar and fat. This is conflicting too with another health advice of moderate provision of foods which contain high levels of sugar and fat to children. Although Kayan-Acun (2010) already investigated religious beliefs of Turkish mothers in the compliance to the health advice, both conflicting health advices mentioned above were not examined before. The beliefs and opinions of native parents will be compared to Islamic parents in order to answer the following research question: *What differences in beliefs about vitamin D intake via supplementation, fortified foods and sun exposure for children between 0-4 years exist between native and Islamic parents?* On behalf of the theoretical framework, (non-) health behavior could be explained in the result section and determinants of the (mal) adaptive response, extracted from the study, could be used to improve and tailor health communication.

Material and methods

The research design was observational and explorative and at first, the in- and exclusion criteria were reported. The aim of the research will be on creating insights on beliefs, feelings about sufficient vitamin D intake rather than proving significant associations which will be impossible because a lack of time and the qualitative character of the research. All participants in both groups, had to have at least one child aged 0-4. Furthermore, in order

to explore the influence of religious beliefs on compliance to vitamin D guidelines another inclusion criterion for the group which would be compared to the native one, was at least one of the parents had to be Moroccan-Islamic.

Moreover, both parents had to support and give a Moroccan-Islamic education to their child(ren) and the second group will thus be defined as 'Islamic'.

In total, 32 participants were asked and eventually five people decided to participate and were individually interviewed during three weeks. At first, a focus group interview seemed beneficial since it could stimulate discussion between participants and provoke more and different views and beliefs, which turned out not applicable in the end. A semi-structured questionnaire was developed, based on insights acquired from The Protection-Motivation Theory (Rogers, 1983). The semi-structured character of the questionnaire means a structure of main topics and possibly applicable questions. A semi-structured questionnaire should only give direction to an interview (Vaughn, 1996). All interviews were audio-taped to make sure all given answers were understood.

Coding method

In order to analyze the answers given in the interviews, all theoretical concepts from the Protection-Motivation Theory (Rogers, 1983) were coded as "free nodes", a kind of topic, in Nvivo. These free nodes were, for instance, "severity", "response efficacy" etcetera. Secondly, all given answers were put into Nvivo and combined to a free node. In order to analyze, the separate nodes could be opened and the different answers given to such a specific topic could be described.

Results

Results were described, by subdividing them to different topics from the questionnaire. Examples of these topics were: advantages of sufficient vitamin D intake, risks and disadvantages of insufficient intake, estimation of own ability to provide sufficient vitamin D etcetera. All topics in the result section address a certain aspect from the theoretical framework. Advantages of sufficient intake addresses the efficacy of the response, estimation of own ability addresses the concept of self-efficacy and so own.

Advantages of sufficient vitamin D intake

Most native and Islamic participants were aware vitamin D products and supplements could contribute to healthy, daily diet of children aged 0-4. Apart from the awareness

of health advantages, several participants in both groups had misconceptions about the specific effectiveness of vitamin D. Furthermore, in both groups different rewards were found: sometimes participants provided vitamin D because vitamins were always regarded as healthy (intrinsic reward), other participants provided vitamin D because a specialist emphasized the need to (extrinsic reward).

Risks and disadvantages of insufficient vitamin D consumption

Questions about risks and disadvantages aimed to explore the vulnerability and severity of insufficient intake participants experienced. Most participants did not feel substantial fear related to an insufficient intake of vitamin D for their child(ren). A few participants mentioned they would be rather worried if their child(ren) would refuse to eat many foods.

Estimation of own ability to provide sufficient vitamin D

With regard to the provision of vitamin D supplements to children, most participants bought premium brands drops for their children because of positive experience with older children and most children liked the taste. A few participants used an alternative for supplements like artificial infant milk. Furthermore, most participants did not experience problems with the supplementation apart from some busy days or forgetfulness. In some cases, children now and then refused to take the supplements, but this was not seen as problematic.

In both groups, most participants knew sunlight was an important source of vitamin D. In the native group, participants nevertheless preferred the use of sunscreen in order to prevent sunburn and skin cancer instead of vitamin D production in the skin. In the Islamic group, participants did not use any sunscreen for their children, apart from summer and days visiting the beach.

Some participants did not have any or wrong knowledge about the natural sources of vitamin D. With regard to natural products containing vitamin D, most participants indicated their child(ren) would eat eggs and (fatty) fish regularly, although participants did not give their child(ren) these products with the intention to consume vitamin D.

Role of Islamic religion in providing sufficient vitamin D

All Islamic participants indicated Islamic beliefs are supporting and justifying the use of natural vitamin D containing products, vitamin D supplements and fortified foods. All participants mentioned the religious guideline to take and consume products which are

scientifically proven to improve your health although in general, natural products would be preferred.

Beliefs regarding communication in a child health center and other sources of information about children's health

Most native participants indicated dissatisfaction about the consultation and messages they received at a child health center. Most important criticism was the messages were obsolete, outdated or not realistic for their child(ren). In the Islamic group, most participants approved the communication in a child health center and saw the messages as clear guidelines. In both groups, most participants had several sources of information about children's health and development they regularly used. A few participants mentioned to prefer sources based on scientific research. Furthermore, most participants would talk with other parents about children's health and development. Vitamin D would be rarely a discussion topic because participants had few struggles with the provision and did not see it as an important health contribution.

Discussion/Conclusion

Native and Islamic participants had similar beliefs regarding advantages, risks and own-ability to provide vitamin D. Main differences were found in the use of sunscreen, which much higher in the native group. Native parents experienced more fear of sunburn in their children and prefer the use of sunscreen over the production of vitamin D in the skin. Furthermore, Islamic parents had less criticism on the communication in a child health center than native parents.

The maladaptive behavior of applying sunscreen to children, which would hamper the production of vitamin D in the skin, would be reinforced by stronger feelings of severity of and vulnerability to sunburn and skin cancer in native parents (Floyd et al., 2000). Similar beliefs regarding importance, risks and own-ability to provide were influenced by a high response-efficacy, a high self-efficacy and low response-costs in providing vitamin D supplements, natural foods and fortified foods (Floyd et al., 2000).

Limitations

A first important limitation was the contact with the research population was done via another person, a Islamic student at Maastricht University. The low response rate might improve by personal contact.

Another limitation has to do with the age and gender distribution in the research population. Only females participated and the age of participants varied between 25-35. Male participants and older or younger females might provoke different beliefs and feelings.

Furthermore, a focus group interview with the Islamic participants was impossible because of organizational problems. In the end, individual interviews turned out to be more applicable because one participant was very dominant which might have overwhelmed and discouraged other participants in their beliefs.

Some interviews and recordings were interrupted by children playing or crying in the background. Nevertheless, it was important for most participants they did not have to arrange any babysit. The possibility for participants to be interviewed at home with their children increased the response rate.

Implications for further research and final conclusion

Due to a low response rate and a lack of time and money, too little answers were retrieved from the interviews and strong implications for practice is not possible. The response rate and transferability of results could be increased and improved by the combination of both qualitative and quantitative research, in order to explore the topic of sunscreen use more deeply. It can be concluded that native and Islamic parents have similar beliefs and knowledge about the need for sufficient vitamin D consumption. Islamic parents have, on the other hand, different beliefs about the need for sunscreen use and appreciate the communication in a child health center and via health professionals more than native parents do. The combination of research methods would cost more money and time but could also complement the findings of this research (Kelle, 2006): different beliefs on sunscreen use, communication in child health center and estimations of professional advices of Islamic parents compared to native parents.

Role of the student

In this research, several views to the topic of sufficient vitamin D intake were investigated by four students. This division was proposed by the tutor. In my research, the role of religious beliefs and cultural-religious differences in vitamin D provision was investigated and complemented the overall view of vitamin D provision. In the thesis period, all students wrote individually and feedback was given weekly by the other students and the tutor. All four students discussed their results in a weekly meeting and I tried to advise others and criticize my own work in the meeting in order to improve the scientific character.

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