Title: A survey of thickened fluid prescribing and monitoring practices of Australian health professionals

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Abstract

Rationale, aims and objectives: This study aimed to describe 1) how thickened fluids are supplied to clients with dysphagia; 2) how clients' consumption of thickened fluids and hydration status is monitored; and 3) the impact of institutional factors on thickened fluid intake and hydration in Australian health care settings.

Method: Speech pathologists, dietitians and nurses working in Australian health care settings were asked to voluntarily participate in an on-line survey which was advertised through their respective professional associations. The questions required a self-report of their practice with respect to thickened fluids.

Results: Few health care facilities (17%) monitored thickened fluid consumption routinely even though, in the opinion of 51% the respondents, clients on thickened fluids at their facility do not drink enough. Palatability of the thickened fluid products and patients' dependence on others for drinking were thought to have a major impact on fluid intake. Respondents also highlighted institutional factors such as inadequate assistance from staff and inconsistent systems for monitoring fluid intake and signs of dehydration. The most common way to address inadequate intake was for nurses to "push fluids" (87%). Free water protocols were used only 14% of the time and setting small oral fluid targets throughout the day was the least common strategy (11%).

Conclusions: There is a need for Australian health care facilities to educate all clinical staff about the risks of dehydration and develop clinical pathways for clients with dysphagia which

include routine monitoring of oral fluid consumption and dehydration and timely intervention.

Key words: deglutition disorders, thickened liquids, fluid balance, dehydration, drinking, data collection

Introduction

Hospitalised individuals with dysphagia (difficulty swallowing) are at greater risk of malnutrition and dehydration than those without dysphagia [1-2]. Speech pathologists commonly prescribe thickened fluids when patients present with dysphagia for thin liquids with the aim of providing a safe oral form of fluid intake. However, there is widespread perception by dysphagia clinicians that patients do not consume enough when prescribed thickened fluids and the literature confirms that this is a valid concern for many clinical populations [3-6]. Furthermore, studies have demonstrated that hospitalised individuals with dysphagia are at high risk of dehydration [7] [8].

Stroke guidelines specifically recommend the screening of nutrition and hydration for all patients hospitalised following stroke [9-10]. Screening for malnutrition is becoming more prevalent with 78% of all hospitals surveyed across Australia in 2008 indicating they implement nutritional screening processes [11]. However, screening for dehydration is less prevalent perhaps because of the complex nature of dehydration and the lack of a standard assessment protocols [12-14]. Given this lack of routine screening for dehydration in hospitals, even patients at known risk for dehydration could remain undiagnosed. Patients with dysphagia who are reliant on the oral intake of thickened fluids and food as their only

source of hydration, i.e. those whose diet is not supplemented by enteral feeding, may be particularly at risk of dehydration.

Previous opinion surveys around the issue of thickened fluid consumption have focussed on the preparation of thickened fluids and internal patient factors for non-compliance [15-17]. To date, no research has specifically evaluated the contribution of institutional frameworks to poor fluid intake i.e. the way thickened fluids are supplied, staff assistance is provided and consumption is monitored. It has been suggested that a lack of well-educated and supervised staff, particularly in residential aged care facilities, contributes to inadequate fluid intake [18]. Authors purport that staff have neither the time nor expertise to successfully feed multiple residents who present with dysphagia, cognitive or other functional impairment [18-21]. Conversely, it has been suggested that dehydration is rarely due to neglect by staff but rather is due to disease processes which result in increased fluid losses coupled with decreased fluid intake related to decreased thirst [12].

The purpose of this study was to survey Australian speech pathologists, dietitians and nurses in order to determine how thickened fluids are supplied to patients with dysphagia in their workplaces and the processes by which patients' consumption of thickened fluids and hydration status are monitored, thereby contributing information regarding the impact that some institutional factors may have on fluid intake and dehydration.

Methods

Ethics approval for the study was obtained from the Social and Behavioural Research Ethics Committee at Flinders University, South Australia. Two expert reference groups, consisting of experienced speech pathologists, dietitians and senior nurses working clinically in stroke and rehabilitation units, were convened to assist with questionnaire design. Further input was provided by a resident medical officer at one of the hospitals.

The questionnaire, developed using Survey Monkey®[22], consisted of 15 multiple choice questions and took less than 10 minutes to be completed. For most questions respondents were able to choose more than one answer (i.e. select all answers that apply) and had the option of recording free text to qualify responses. The survey was electronically distributed in April 2013 to Australian speech pathologists, dietitians and nurses via a paid advertisement through their respective professional networks namely: Speech Pathology Australia (SPA); the Rehabilitation and Aged Care Interest Group, Nutrition and Disability Interest Group and Nutrition Support Interest Group of Dietitians Association of Australia (DAA), and the Australian Rehabilitation Nursing Association (ARNA). A period of 43 days was allowed for replies with a reminder sent after 36 days. The data from the completed surveys were entered into the Statistical Package for Social Sciences, version 20.0 [23] and analysed using descriptive statistics. Given that respondents were able to choose multiple answers to most questions, the response percentages presented in the text below do not always total 100%.

Results and Discussion

Response rate

The survey was sent to all members of Speech Pathology Australia and of the 4553 members, 387 participated in the survey, indicating a response rate of 8.5%. It was also sent to dietitians who were members of the following DAA interest groups: Nutrition support (1367 members), Rehabilitation and Aged Care (918 members), and Nutrition and Disability (360 members), the memberships of which may overlap. The 131 responses from dietitians equated to a response rate of at least 5%. Additionally, the survey was sent to 1102 members of ARNA, with 155 responses equating to a response rate from nursing of 14.1%.

Characteristics of participants

A total of 676 health professionals participated in the survey; 57% (n=387) were speech pathologists, 23% nursing staff (either enrolled nurses n=23 or registered nurses n=132), 19% dietitians (n=131) and 1% other staff such as rehabilitation managers. Respondents came from all states and territories of Australia in a spread representative of the population density across the country. Respondents resided in a variety of locations ranging from capital and regional cities to rural and remote centres. The majority of respondents worked in acute (55%) or rehabilitation (44%) inpatient facilities, but they also worked in residential aged care facilities (24% in high level of care facilities), community health settings and in clients' homes; many were employed across multiple settings.

The responses to the survey questions have been combined and are presented and discussed in the following themes: how thickened fluids are supplied in health care settings; whether and how consumption is monitored along with perceptions about why intake is inadequate and the common intervention strategies if deemed inadequate; and whether and how hydration is monitored.

Supply of thickened fluids

Thickened fluids are supplied to patients in 98% of the facilities in which respondents worked. The majority of respondents (82%) indicated that thickened fluids are supplied to their patients in pre-packaged containers of commercially available products. Thirty-five percent (35%) indicated that their hospital prepares thickened fluids in bulk from a powder thickener and 38% indicated that thickened drinks are prepared individually by staff using thickening powder as required. The most common location for thickened fluids to be supplied is at a patient's bedside (81%), and/or on their meal-tray (77%), in the dining room (47%) and/or on a mobile drink trolley (47%). Only 16% of respondents indicated that thickened drinks are available in therapy areas. The most common schedule for delivery of thickened fluids to patients is at every meal and snack time i.e. 5-6 times per day (60%) with some facilities having thickened drinks available and accessible all day (23%).

Several respondents indicated that the amount of thickened fluid supplied in a 24 hour period is calculated on an individual basis according to the patient's clinical presentation (24%). Others estimated various amounts are offered: between 1200ml to 1400ml (24%), between 1500 to 1700ml (13%) or between 1800 to 2000ml (6%). Some (23%) did not know how much their patients on thickened fluids are offered. It is of some concern that, if clients are reliant on oral fluids alone, even if they drink all fluid offered, their intake would still be well below the beverage intake recommended for healthy adults. According to nutrient reference values, based on the median intake of healthy adults across various age groups, males should consume between 2600ml and 3000ml per day from beverages alone, and females between 2100ml to 2200ml per day [24-26].

Monitoring of thickened fluid consumption

Some facilities monitor consumption routinely for all patients on thickened fluids (17%) whereas a small number do not monitor consumption at all (8%). About two-thirds of respondents (67%) indicated that the consumption of thickened fluid is monitored only when a clinical need is recognised i.e. on a case by case basis. The most commonly used method is completion of Fluid Balance Charts (64%) or a similar individual food and fluid intake chart (49%). Some respondents indicated that their facilities leave it to the patient or family themselves to report how much they are drinking. Others indicated they did not know how consumption was monitored (11%). Unfortunately, because knowledge of the clinical staff about fluid intake may be sub-optimal and patients are often unable to accurately self-report, the clinical need of many patients may not be identified without routine screening. Even with screening processes in place, the choice of monitoring tool may not be optimal, with several respondents indicating that fluid and food charts are not accurately completed.

Only 9% of respondents believed their patients drink enough, many believed adequacy of intake varies from client to client (37%) and only a few (3%) did not know whether or not patients drink enough. However, over half of the respondents (51%) thought that patients on thickened fluids at their facility do *not* drink enough. The literature and other responses from this survey support this prevalent perception [3-6].

The perceived reasons for patients not drinking enough were varied. Many respondents believed patients dislike the texture and feel in the mouth (80%), or the taste of thickened

fluids (63%). The issue of palatability is prevalent even though the majority of respondents (82%) indicated that their hospital supplies pre-packaged commercially available products which are thought to be more acceptable to clients and known to be more consistent in their viscosity [27]. This survey reflects an increase in the use of pre-prepared products over recent years; 34% of respondents in an American survey in 2004 reported the use of pre-prepared products [16] whereas powdered thickeners were the most commonly used agents in an informal survey in 1996 [28]. Many respondents in this present survey expressed concern about the quality of on-site prepared thickened fluids using powdered thickeners in that they are often lumpy, thicker than prescribed, left unrefrigerated and staff are not prepared to thicken drinks of the patient's choice (such as water or coffee or tea). It appears that, despite advances in product quality, many health professionals still have the impression that their clients do not like drinking thickened fluids due to poor palatability.

Several respondents believed that the patients' dysphagia prevents them from drinking enough (42%). Others attributed inadequate intake to the hospital system; that patients aren't offered enough thickened fluid (26%) or their consumption is not monitored closely enough (37%). Some (11%) indicated that the patient's functional disabilities (immobility, poor fine motor control, communication and/or cognitive impairment) resulted in them being unable to open packages and access drinks independently. For most healthy adults, it is relatively easy to maintain adequate hydration by drinking when they feel thirsty. But many hospitalised patients are unable to drink independently; they require full or partial assistance or supervision to drink and so are at risk of dehydrating [18]. Some respondents (11%) thought that the provision of assistance by staff was inadequate for dependent patients, either because of inadequate staffing and time required for feeding dependent patients, lack of education and

support, or poor attitude by staff. These opinions are consistent with concerns reported over 15 years ago [18, 20, 29].

Monitoring of Hydration and Intervention

Patient hydration was monitored by clinical measures either through observation of clinical signs such as dry mouth, skin turgor, headaches or the colour of urine (70% of respondents), or the standard nursing observations of blood pressure, pulse and respiratory rate (62%). Thirty-seven percent of respondents reported the use of biochemical analysis of blood samples to monitor hydration and 28% indicated that urine analysis is performed. Unfortunately screening for dehydration is not always accurate. Clinical signs of dehydration can easily be attributed to other clinical processes, medications, patient function and compliance etc. Researchers also disagree about the best objective measures of dehydration; some argue that biochemical parameters are necessary [14], whereas others suggest physical parameters such as systolic blood pressure drop on standing, sternal skin turgor, tongue dryness and body mass index are more reliable [13]. One author developed a dehydration risk appraisal checklist based on the known risk factors for dehydration including age, female gender, health conditions, medications, factors affecting intake and laboratory results [21].

Some respondents indicated that it was left to the patient to self-report on their hydration (if they felt thirsty, lethargic, dry mouth etc.) and others reported that hydration is not monitored at all. A number of respondents did not know how hydration is monitored (18%); 28% of the speech pathologists, 10% of the dietitians and <1% of the registered nurses fell in this category. Although previous studies have indicated that nursing knowledge of dehydration

risks and assessment is poor [18, 20], the findings of this survey would suggest this is still the case for some health professionals, particularly speech pathologists. Whilst some may argue it is not the role of a speech pathologist to know about optimum fluid intake and how hydration is monitored, the counter argument is that the speech pathologist, who prescribes the thickened fluid, should be aware of the impact this will have on an individual's fluid intake and potential health complications.

The most frequently used strategy if thickened fluid intake and hydration is considered inadequate was for nursing staff to encourage, or "push", the patient to drink more thickened fluids (87%), followed by the use of non-oral supplementary fluid through intravenous therapy (IVT), hypodermoclysis or enteral tube feeding (66%). Many respondents indicated they would educate the patient and their family about the importance of drinking more and staying hydrated (64%). Referral for specific medical or dietetic assessment was frequently indicated (44% and 64% respectively). Other common strategies were to offer alternative flavours of thickened fluids (59%) or order more thickened fluids for patients (46%). Some would offer more foods high in fluid content (23%). Only 14% would implement free water protocols. Free water protocols were originally developed to counter inadequate intake due to patient non-compliance when prescribed thickened fluids. Patients are offered water between meals under controlled conditions including strict oral hygiene even though they are known to aspirate thin fluids [30]. More respondents were likely to cancel the thickened fluids and upgrade their patient to thin fluids sooner than they otherwise would have in the context of reduced intake, with recognition and acceptance of associated risk (23%). The strategy of setting small but regular targets for fluid intake throughout the day with increased monitoring, a strategy commonly recommended in nursing journals [21, 31], was only

implemented by 11% of respondents.

Whilst the prevalent opinion was for nursing staff to "push" and encourage fluids when a client is suspected of having inadequate intake, perhaps consideration should be given to sharing this responsibility amongst the clinical team. Clients are often located in a variety of geographical areas of a rehabilitation facility or hospital throughout the day such as gyms, other therapy rooms, group rooms, radiology etc. Additionally, patients with dysphagia are also often communication and cognitively impaired, frail, elderly, acutely ill and/or functionally dependent and may not ask for a drink. All clinical staff working with an individual could ensure patients are offered and have access to fluids and are provided with assistance (if necessary) to drink. Unfortunately for this to occur availability of drinks would need to improve, as very few respondents (16%) indicated that thickened drinks are available in therapy areas where clients are presumably expending considerable energy.

Limitations

This study had limitations inherent in the methodology of surveying targeted groups. The findings are based on self-report of practice, not observed practice. The survey was voluntary and therefore self-selective of those who have an interest in the area, and not necessarily representative of the whole population of health professionals working with clients with dysphagia on thickened fluids. However, the large number of respondents to the survey (676 health professionals) gives high validity to the findings.

Conclusion

This study surveyed 676 Australian speech pathologists, dietitians and nurses to obtain a snapshot of how thickened fluids are supplied to clients with dysphagia in hospitals and how clients' consumption of thickened fluids and hydration status is monitored. Over half of the respondents do not believe that clients with dysphagia on thickened fluids drink enough. They indicate palatability of the thickened products themselves and patients' dependence on others for drinking have an impact on fluid intake. In addition they highlight institutional factors such as inadequate assistance from staff and inconsistent systems for monitoring fluid intake and signs of dehydration. The findings of this survey would indicate health facilities do not routinely or objectively monitor the fluid intake and hydration of clients with dysphagia who are prescribed thickened fluids, even though the literature would indicate they are at risk of poor fluid intake and dehydration [3-6] [7] [8].

Implications for practice include the need to educate all clinical staff about the risks of dehydration and clinical pathways for clients with dysphagia which include routine monitoring of oral fluid consumption and dehydration and timely intervention. Focus should be on those aspects of service delivery that health professionals can change including: design and evaluation of education programs for all clinical staff working with clients with dysphagia about the importance of adequate fluid intake and the risks of dehydration; procedures which outline clear expectations and accountability for all clinical staff with respect to drinking and hydration; establishing and auditing care plans for clients with dysphagia which include the routine offering of fluids, recording of intake and assessment against target amounts throughout the day, assessing for dehydration, and implementing and evaluating intervention strategies.

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