Nutrition and Aging

Enteral Feeding in End-Stage Dementia:
A Comparison of Religious, Ethnic, and National Differences in Canada and Israel

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Background. Although enteral feeding in end-stage dementia is thought by many clinicians to be “futile,” it is still widely used. We examined rates of tube feeding (gastrostomy or nasogastric) in end-stage dementia in hospitals in both Canada and Israel, and hypothesized that Canadian non-Jewish affiliated hospitals would have the lowest (and Israeli institutions the highest), with Canadian Jewish hospitals exhibiting intermediate rates.

Methods. We conducted a cross-sectional survey of six geriatric long-term hospitals: two in Israel and four in Canada (two Jewish affiliated, two not; two in Ontario, two in Quebec province). Patients with end-stage dementia were assessed and further analyzed for type of feeding.

Results. In the six hospitals, 2287 long-term beds were surveyed, of which 1358 (59.4%) were used by demented patients of whom 376 (27.7%) were severely demented (Global Deterioration Scale-level 7). Of these, 24.5% (92) were fed by nasogastric tube or gastrostomy tube. Significant differences in tube-feeding prevalence were found between Canada (11%) and Israel (52.9%), with only 4.7% seen in non-Jewish Canadian institutions. Jewish affiliated hospitals in Canada exhibited an intermediate rate of 19.6%. However, for within-country dyads, wide differences were also found. When we examined patient religion, we found that Canadian non-Jewish patients had the lowest rates (3.2%), Israeli Jewish patients the highest (51.7%), and Canadian Jewish patients exhibited an intermediate rate (19.0%) of tube use.

Conclusions. Despite reservations concerning its utility, feeding tube use is reasonably widespread in patients who have reached the stage of severe dementia. Canadian institutions exhibited a lower prevalence of feeding tube use than did Israeli hospitals. Between-country and between-province differences in practice may be explained by some combination of administrative and/or financial incentives, religion, and culture; within-country and within-ethnic group differences may be caused, at least in part, by differing institutional cultures.
In Toronto, Ontario, Canada, the Baycrest Centre for Geriatric Care (hospital D) is a multilevel academic geriatric health care facility, which is a not-for-profit, government-financed organization under Ontario’s Ministry of Health and Long-Term Care. The hospital is affiliated with the Toronto Jewish community. It consists of a Home for the Aged (approximately 472 beds), a complex continuing care hospital (300 beds), and a retirement home (220 apartments). This centre serves elderly individuals ranging from those living in the community to those requiring the most complex continuing care. The hospital serves a large number of individuals with dementia of varying degrees who can move through the different programs depending on their clinical needs. In the hospital many of the patients suffer from late-stage dementia and/or other neurological conditions.

Also in Toronto, the Sunnybrook and Women’s College Health Sciences Centre (hospital B) is a not-for-profit, government-financed, academic centre providing both acute and long-term care for adults. In a separate wing, there are 561 residents living in long-term care, 90% of whom are war veterans. These beds include 304 for complex continuing care, 190 nursing home beds for veterans, and 67 complex continuing care beds (reactivation, palliative care, respite, chronic care) for community patients. Approximately 53% of the long-term care residents have Alzheimer’s disease or another dementia, and 32% reside on secure dementia units. Most residents with intercurrent illnesses can be treated in the long-term care setting, but residents requiring more urgent or complex care are transferred to the acute care side of the facility.

In Israel, the Shoham Geriatric Centre (hospital E) is a multilevel, 970-bed government-owned and government-funded campus, the largest of its kind in Israel. In the Long Term Care section, there are 322 dependent nursing home patients, 300 semi-independent frail elderly patients, and 108 mentally frail patients (many of whom suffer from late
demographic and social factors, as well as the effect of ethnicity and gender (24–26).

On moving from Canada to Israel, one of the authors (AMC) observed that Israeli families more easily acquiesced to or requested such a practice and that Israeli physicians were more likely to recommend it than were their Canadian counterparts. As well, it appeared that in end-stage dementia, although enteral feeding was much less common in Canada, it appeared to be practiced more frequently in Jewish than in non-Jewish institutions.

We tested these observations by studying dementia patients in a convenience sample of six long-term care hospitals in Israel and Canada: four affiliated with a Jewish community (two in Israel, two in Canada) and two with no Jewish affiliation (one in Montreal, Quebec and one in Toronto, Ontario). We briefly describe the six institutions, some details of which can be seen in Table 1.

In Montreal, Quebec, Canada, the Institut universitaire de gériatrie de Montréal (hospital A) is a general and specialized geriatric care hospital with a combined capacity of 452 beds. It is a not-for-profit, government-financed institution offering a wide range of services including day hospital, day center, acute care geriatric assessment, intensive functional rehabilitation, and residential and long-term care. The long-term care program is intended for seniors in an advanced stage of illness. Residents are placed according to autonomy, level of physical care required, and cognitive status ranging from moderate to severe impairment.

Also in Montreal, Maimonides Geriatric Centre (hospital C) is a not-for-profit, government-financed, long-term care Jewish affiliated institution. The centre offers active geriatric care for its 387 residents, which includes the management of the majority of nonsurgical conditions. This institution also provides between four and eight respite beds, a day hospital with a capacity of up to 15 clients daily, and a variety of other programs.

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**Table 1. Institutional and Reisberg-7 Patient Characteristics**

<table>
<thead>
<tr>
<th>Institutions</th>
<th>Level of Care (h/d)</th>
<th>University Affiliation</th>
<th>Total No. of Beds</th>
<th>No. of Demented Elderly Patients (% of Total Beds)</th>
<th>No. (%)</th>
<th>Female No. (%)</th>
<th>Median Age, y</th>
<th>Median of Stay, Days</th>
<th>Religion: Jewish (%)</th>
<th>Use of NG/PEG N (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Canadian Non-Jewish</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A) IUGM, Montreal</td>
<td>&gt;3 h</td>
<td>Yes</td>
<td>379</td>
<td>145 (38.3%)</td>
<td>88 (60.7%)</td>
<td>75 (85.2%)</td>
<td>86</td>
<td>875</td>
<td>4 (4.5%)</td>
<td>0 (0%)</td>
</tr>
<tr>
<td>B) Sunnybrook, Toronto</td>
<td>CCC</td>
<td>Yes</td>
<td>525</td>
<td>325 (61.9%)</td>
<td>60 (18.5%)</td>
<td>5 (8.3%)</td>
<td>83</td>
<td>1460</td>
<td>9 (15.0%)</td>
<td>7 (11.7%)</td>
</tr>
<tr>
<td>Subtotal</td>
<td></td>
<td></td>
<td>904</td>
<td>470 (51.9%)</td>
<td>148 (31.5%)</td>
<td>80 (54.1%)</td>
<td>7</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Canadian Jewish</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C) Maimonides, Montreal</td>
<td>&gt;3 h</td>
<td>Yes</td>
<td>381</td>
<td>265 (69.6%)</td>
<td>81 (30.6%)</td>
<td>65 (80.2%)</td>
<td>89</td>
<td>1728</td>
<td>79 (97.5%)</td>
<td>5 (6.2%)</td>
</tr>
<tr>
<td>D) Baycrest, Toronto</td>
<td>&gt;3 h</td>
<td>Yes</td>
<td>170</td>
<td>143 (84.1%)</td>
<td>26 (18.2%)</td>
<td>20 (76.9%)</td>
<td>85</td>
<td>1422</td>
<td>22 (84.6%)</td>
<td>16 (61.5%)</td>
</tr>
<tr>
<td>Subtotal</td>
<td></td>
<td></td>
<td>551</td>
<td>408 (74.0%)</td>
<td>107 (26.2%)</td>
<td>85 (79.4%)</td>
<td>21</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Israel</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>E) Shoham, Pardes Hanna</td>
<td>MOH</td>
<td>No</td>
<td>632</td>
<td>397 (62.8%)</td>
<td>72 (18.1%)</td>
<td>59 (81.9%)</td>
<td>84</td>
<td>772</td>
<td>69 (95.8%)</td>
<td>19 (26.4%)</td>
</tr>
<tr>
<td>F) Herzog, Jerusalem</td>
<td>HMO</td>
<td>Yes</td>
<td>200*</td>
<td>83 (41.5%)</td>
<td>49 (59.0%)</td>
<td>38 (77.6%)</td>
<td>84</td>
<td>531</td>
<td>48 (98.0%)</td>
<td>45 (91.8%)</td>
</tr>
<tr>
<td>Subtotal</td>
<td></td>
<td></td>
<td>832</td>
<td>480 (57.7%)</td>
<td>121 (25.2%)</td>
<td>97 (80.2%)</td>
<td>64</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td></td>
<td>2287</td>
<td>1358 (59.4%)</td>
<td>376 (27.7%)</td>
<td>262 (69.7%)</td>
<td>84.8</td>
<td></td>
<td>92 (24.5%)</td>
<td></td>
</tr>
</tbody>
</table>

*Notes:* *Herzog (hospital F) has 330 beds of which 85 are for psychiatry patients.*

CC = Complex continuing care; MOH criteria (nursing care); HMO = Sick Fund (skilled nursing).

NG/PEG = nasogastric/percutaneous endoscopic gastronomy; IUGM = Institut Universitaire de Gériatrie de Montréal.
stage dementia and/or other neurological conditions) cared for in specialized dementia care units. There are another 150 elderly patients in the acute, subacute, rehabilitation, and respiratory wards.

Also in Israel, the Sarah Herzog Memorial Hospital (hospital F) is a not-for-profit charity hospital governed by an all-volunteer board. The hospital has 326 beds, of which 250 are for the care of geriatric patients, and covers the full spectrum of geriatric care from acute to long-term care, rehabilitation, and long-term respiratory support. The hospital operates extensive outpatient services in the community, supports an active research program affiliated with the Hebrew University Medical School, and runs a full geriatrics residency program. Specialized departments cater to the evaluation and care of behavioral disorders of the elderly population as well as the host of neurological disorders in that age group (such as the dementias and Parkinson’s disease). Three departments focus on long-term care dementia patients, most of whom are in the final stages of the disease.

We hypothesized differences in rates of NG or PEG tube feeding in end-stage dementia between Canada and Israel as well as between Jewish and non-Jewish institutions. As well, as a result of cultural and/or religious influences, we predicted a “graded-response curve” with the lowest rates foreseen in the two Canadian non-Jewish institutions (as well as for Canadian non-Jews), the highest in the Israeli hospitals (for Israeli Jews as well), and an intermediate rate expected in the Canadian Jewish affiliated hospitals and Canadian Jews.

Israel and Canada both enjoy national health systems with wide coverage of acute and rehabilitative care. However, Israel’s long-term care system is somewhat more privatized than is Canada’s and is closer to the American Medicaid model (27–29).

Within Israel there are no Ministry of Health regulations as to when to use enteral feeding in the demented patient. However, there are strict guidelines distinguishing between levels of care (“nursing” and “complex nursing”) which use, among other criteria, both PEG and NG tubes (30). Several years ago, the Israel Medical Association organized a consensus conference which dealt with this issue. A set of nonbinding clinical guidelines were written, but these were only recently published and came out after the time of our data collection (31).

Health care in Canada falls under the jurisdiction of the provincial authorities. In both Ontario and Quebec, there are no regulatory or legislative requirements specifically relating to the use of tube feeding which in both provinces, as is the case in Israel, involves a purely clinical decision between the physician and patient and/or surrogate. That being said, Ontario’s Health Care Consent Act does outline the legal requirements which govern the required consent in order for a feeding tube to be utilized (32).

METHODS

We conducted a cross-sectional study of a convenience sample of six institutions in 2001 and 2002. In each hospital, all of the patients were surveyed over a period of a few days. The study was approved by all participating hospital Institutional Review Boards.

A diagnosis of Alzheimer’s disease was made according to the Diagnostic and Statistical Manual of Mental Disorders—Fourth Edition (DSM IV) (33), and those patients who had reached end-stage dementia corresponding to Reisberg stage 7 of the Global Deterioration Scale (34). This instrument indicates deterioration consisting of seven clinically identifiable stages, ranging from normal cognition (stage 1) to very severe dementia (stage 7) where most patients with feeding difficulties are to be found. The Global Deterioration Scale has been widely used in both descriptive and intervention studies (35).

For each institution the following information was collected: level of care, overall number of patients, and number of demented patients. The chart for each demented patient meeting the Reisberg-7 criteria was reviewed to collect birth date, sex, marital status, date of admission, ethnicity, religion, diagnosis, and type of feeding.

Descriptive analyses (chi-square) were conducted to examine differences in rates of NG or PEG tube feeding among the three hospital dyads. The first included non-Jewish hospitals in Canada and the second, Jewish institutions in Canada (defined as “Jewish” if they are identified as such and maintained ritual Jewish dietary law and employed an institutional rabbi and supervisor of Kosher practice. The third category included two Israeli institutions which both met the same criteria for “Jewish” as did the two Jewish Canadian hospitals.

RESULTS

Altogether, 2287 beds were surveyed in the six hospitals (coded A–F) of which 1358 (59.4%) were occupied by demented patients (see Table 1). Of these, 376 (27.7%) were utilized by patients with severe dementia. As was to be expected in such institutions, patients were mainly female (69.7%) and primarily old-old (median age: 84.8 years). Excluding Toronto’s Sunnybrook Hospital (hospital B), a veterans’ institution, females made up 81.3% of the study population (see Table 1).

With respect to religion, of the 376 Reisberg-7 patients surveyed, almost all (96.7%) of the 121 Israeli patients were Jewish, 4 (3%) were Moslem, and none were Christian. In Canada, within the Jewish affiliated hospitals, of the 107 heavily demented patients, almost all 102 (96.2%) were Jewish (4 were Christian). In the two non-Jewish Canadian hospitals, 122 of 148 (82.4%) were Christian (Catholic or Protestant), 13 were Jewish (8.8%), and 1 was Moslem (<1%).

Overall, almost one quarter (92) of the 376 Reisberg-7 patients were tube-fed, with 48 using an NG tube (52.2%) and 44 a PEG tube (47.8%). Of the 28 patients with tubes in Canada, only 5 (17.9%) used an NG tube, whereas in Israel the NG tube predominated with 43 of 64 (67.2%) so fed (p < .001) (see Table 2).

For the 92 tube-fed patients, 244 indications for such use were listed (Table 3). The most common (29.9%) was “therapeutic intervention” (prevention of dehydration and metabolic abnormalities) followed closely by “basic human care” (28.3%) and “prolong life” (23.4%). In only 3.7% was “prevent suffering/improve quality of life/maximizing comfort” the reason listed.
Overall, in Canada, severely demented patients were much less likely to be tube-fed (11% [28/250]) than in Israel (52.9%) (p < .001) (Figure 1). Comparing the three categories of hospitals, only 4.7% (7/148) of patients in Canadian non-Jewish institutions, 19.6% (21/107) of those in Canadian Jewish institutions, and 52.9% (64/192) in the Israeli institutions were tube-fed (p < .001). There were, however, also wide differences observed within the three hospital dyads (Figure 2). In Canada, Quebec hospitals exhibited a very low rate (3.0% = 5/169) compared to Ontario institutions (26.7% = 23/86) (p < .001).

With respect to religion, regardless of country of origin, only 3.2% (4/125) of Christians (Catholic or Protestant) versus 34.9% (81/232) of Jewish patients were tube-fed. Israeli Jews had the highest rates of tube use at 51.7% (61/118), while Canadian Jews exhibited an intermediate rate of 18.9% (22/116) (p < .001). When ethnicity in Canada was examined, none of the 67 severely demented patients of French-Canadian origin and only 6.3% (5/79) of those patients who identified themselves as English-Canadian were tube-fed. Among the “others” (a significant number of whom would likely be immigrants to Canada), just over one quarter (22/83) were tube-fed.

Among Israeli Jews, ethnicity is defined using different categories. As well, most Israeli elderly persons were born abroad reflecting the fact that of the 121 Israelis being tube-fed, only 8 (6.6%) were native born. Those who came from North Africa or Asia had higher rates of PEG and/or NG tube use (63.6% [14/22] and 65% [13/20], respectively). Of those born in Europe or America, the proportion of tube-fed patients was lower at 42.4% (28/66).

**DISCUSSION**

Overall, as predicted, the rate of tube use in severely demented patients was much higher in the Israeli than in the Canadian geriatric institutions surveyed here. Within Canada, unexpectedly, Quebec institutions exhibited a much lower rate than did the Ontario hospitals. Furthermore, as hypothesized, overall tube use was very low in both non-Jewish Canadian institutions, much higher in Israeli hospitals, with intermediate rates in Canadian Jewish institutions.

When patient religion was examined, Israeli Jews had the highest rates, Canadian non-Jews the lowest, with Canadian Jews indicating an intermediate prevalence.

However, despite the averaged differences among the three hospital dyads, wide variability was observed within

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**Table 2. Type of Feeding of 376 Demented Patients (Reisberg-7) According to Centre**

<table>
<thead>
<tr>
<th>Centres</th>
<th>Assistance or Supervision</th>
<th>Dependent</th>
<th>Syringe</th>
<th>NG/PEG</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Canadian Non-Jewish</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A) IUGM, Montreal</td>
<td>7</td>
<td>49</td>
<td>32</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>B) Sunnybrook, Toronto</td>
<td>1</td>
<td>5</td>
<td>47</td>
<td>0</td>
<td>7</td>
</tr>
<tr>
<td>Canadian Jewish</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C) Maimonides, Montreal</td>
<td>1</td>
<td>16</td>
<td>59</td>
<td>0</td>
<td>5</td>
</tr>
<tr>
<td>D) Baycrest, Toronto</td>
<td>0</td>
<td>0</td>
<td>10</td>
<td>0</td>
<td>16</td>
</tr>
<tr>
<td>Subtotal</td>
<td>9</td>
<td>70</td>
<td>148</td>
<td>0</td>
<td>28</td>
</tr>
<tr>
<td>Israel</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>E) Shoham, Pardes Hanna</td>
<td>3</td>
<td>11</td>
<td>32</td>
<td>7</td>
<td>19</td>
</tr>
<tr>
<td>F) Herzog, Jerusalem</td>
<td>0</td>
<td>4</td>
<td>0</td>
<td>0</td>
<td>45</td>
</tr>
<tr>
<td>Subtotal</td>
<td>3</td>
<td>15</td>
<td>32</td>
<td>7</td>
<td>64</td>
</tr>
<tr>
<td>Total Reisberg-7</td>
<td>12</td>
<td>85</td>
<td>180</td>
<td>7</td>
<td>92</td>
</tr>
<tr>
<td></td>
<td>3.2%</td>
<td>70.4%</td>
<td>1.9%</td>
<td>24.5%</td>
<td>100%</td>
</tr>
</tbody>
</table>

*Note: IUGM = Institut universitaire de geriatrie de Montreal; NG = nasogastric tube; PEG = gastrostomy tube.*

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**Table 3. Indications for NG/PEG in 92* Reisberg-7 Patients**

<table>
<thead>
<tr>
<th>Indication</th>
<th>No.</th>
<th>(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Therapeutic intervention</td>
<td>73</td>
<td>(29.9)</td>
</tr>
<tr>
<td>(prevention of dehydration and metabolic abnormalities)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Basic human care</td>
<td>69</td>
<td>(28.3)</td>
</tr>
<tr>
<td>Prolong life</td>
<td>57</td>
<td>(23.4)</td>
</tr>
<tr>
<td>Prevention of aspiration</td>
<td>23</td>
<td>(9.4)</td>
</tr>
<tr>
<td>Prevent suffering/improve</td>
<td>23</td>
<td>(9.4)</td>
</tr>
<tr>
<td>quality of life/maximize comfort</td>
<td>9</td>
<td>(3.7)</td>
</tr>
<tr>
<td>Family or caregiver preference</td>
<td>9</td>
<td>(3.7)</td>
</tr>
<tr>
<td>Patient preference</td>
<td>2</td>
<td>(0.8)</td>
</tr>
<tr>
<td>Religious concerns</td>
<td>2</td>
<td>(0.8)</td>
</tr>
<tr>
<td>Total</td>
<td>244*</td>
<td>(100)</td>
</tr>
</tbody>
</table>

*Note: *There may be more than one indication per patient.

NG = nasogastric tube; PEG = gastrostomy tube.

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**Figure 1. Prevalence of feeding tube use by country and Canadian province in severely demented (Reisberg-7) patients. *, Hospitals A,B,C,D (see Table 1); ***, hospitals E and F; +, hospitals B and D; ++, hospitals A and C.
each pair. For example, between the two Canadian Jewish hospitals we noted a wide gap, with Maimonides Hospital (hospital C) having lower rates than its Jewish Canadian counterpart (Baycrest, hospital D). While as expected, this Quebec Jewish affiliated hospital (C) had higher rates than its Quebec non-Jewish counterpart (hospital A), to our surprise it exhibited rates even lower than those of the other Canadian non-Jewish hospital studied (Sunnybrook, hospital B). As well, for Israeli hospitals, although both had high rates, there was wide variation between them (hospitals E and F).

That being said, for each dyad, if one looks separately at the three hospitals with the lower rates (A, C, E) and those with the higher rates (B, D, F), despite the wide differences within each dyad, the trend is maintained for both high and low liers (i.e., A < C < E and B < D < F). This consistency and the data concerning patient religion alluded to just above support the notion that, despite the wide discrepancies within each dyad and the overlap between the jurisdictions, our “graded-response” hypothesis may well be valid.

What can explain these differences? Given that the clinical picture of when an Alzheimer’s disease patient begins to have trouble swallowing is similar around the world, on purely clinical grounds one would expect reasonable similarities in the rates of tube use.

Some of the differences observed between Canadian and Israeli hospitals may be explained at least in part by varying administrative and/or financial guidelines. For example, in Israel, there are guidelines favoring NG tubes (27,28,30). Thus we see that, of 64 Israeli patients with feeding tubes, about two thirds (67%; 43) had an NG tube whereas in Canada, PEG is the preferred method. That being said, an administrative preference for an NG tube over a PEG tube alone cannot explain the overall increased use of tubes in Israeli versus Canadian hospitals.

Given that Jewish patients tended to have a much higher rate than non-Jewish, religiosity within Judaism may explain some of the variance, especially among Sephardic Jews who had very high rates (data not shown) and tend to be more traditional than their Ashkenazi counterparts. But why would being Jewish encourage an intervention that most (but not all) clinicians consider clinically futile?

Although a comprehensive description of formal Jewish religious law is beyond our scope, there is a significant literature which deals with it (22,36). Briefly, the Jewish belief system puts great value on the saving and extending of life—at almost any, but not all costs. However, the concept that futile therapy is not to be offered to a patient in the actual process of dying (goses) is also strongly anchored in this system. That being said, for Jews, fluids and food are not considered “disproportionate” therapies as described in Catholic terminology (22,23,36).

As such, for many Jewish people, it may be very difficult to “refuse” alimentation, either per os by tube or parenterally. Even those Jews who are not strict adherents to religious law are likely influenced by the general religious and/or ethnic culture in which they were brought up.

Of interest in this regard is the 0% rate of tube use among the French-Canadian patients, almost all of whom would likely have had a Catholic upbringing. As well, the hospital in Sherbrooke, Quebec (an institution very similar to the Quebec institution [hospital A] surveyed here) also reported that only 2% of its 246 heavily demented patients utilized feeding tubes (M. Arcand, personal communication, 2004).

As hypothesized, we observed a certain “dilution” of this effect among Canadian Jews when the two Jewish-Canadian institutions are considered together. As well, when the data are analyzed by patient religion (Jewish vs non-Jewish), we also observe a “graded-response” curve in that, reflecting the hospital dyad averages, the rate of tube use among
Canadian Jews was intermediate between the low figures for Canadian non-Jews and the higher figures for Israeli Jews. Presumably, many Canadian Jews, observant or not, may be influenced not just by their own cultural and/or religious microenvironment, but by the general Canadian culture which is much less tolerant of such invasive forms of alimentation. The potential effect of the surrounding “macro-culture” seems to be even more evident in Quebec than in Ontario; the rate of tube use is extremely low in the former compared to the latter province.

As well, there may well be differing cultures of practice within a particular institution which may partially override religious and/or cultural leanings of the patient and/or family. For example, when one examines the two Jewish affiliated institutions in Canada, at Montreal’s Maisonneuve hospital (hospital C) most clinical staff actively and explicitly discourage tube use. In the other Jewish affiliated hospital, Toronto’s Baycrest institution (hospital D), tube use seems to be far more easily tolerated by staff.

However, it is interesting to note that in Jewish institution C (Maisonneue), although the rate of tube use per se is low, there is a very liberal use of intravenous fluids as well as hypodermoclysis. It is possible that for both staff and families of hospital C, these practices serve as an acceptable substitute, both medical and ethical, for tube feeding.

Although we could not accurately access the data, many tube-fed patients entered the study institution with their tubes already in place. As such, in many cases, in both countries, the feeding decision was made elsewhere and may, at least in part, help to explain some of the differences found.

Our study has certain strengths. Although there are some interesting American data available comparing variations of tube use within the United States (37–39), to the best of our knowledge ours is the first between-country, between-religion, and between-province effort to examine this question. Our sample included several thousand patients with dementia, generating several hundred severely demented patients. As well, we were able to compare Jewish hospitals in both Israel and Canada and in the latter country, both Jewish and non-Jewish affiliated in two separate provinces.

Study weaknesses include the fact that we utilized a convenience rather than a random sample and were only able to study six institutions. As well, although we had the impression that staff attitudes had perhaps as much influence on the decisions arrived at as those of the patient and/or family dyad, the scope of our research did not allow us to examine this interesting question.

Despite the widespread, but by no means universally held, belief that tube feeding in end-stage dementia may well be medically futile, the practice is still quite widespread in both Canada and Israel. However, on average, the two Israeli hospitals utilize the procedure much more frequently than do their Canadian counterparts, especially compared to the hospitals with no Jewish affiliation. Between-country differences may be explained by variations (in some combination) in administrative and/or financial incentives (27,29,30), religion, and culture among other factors. The within-country and intrareligious differences, especially with respect to Jewish hospitals, may be partly due to varying institutional cultures, and approaches to the issue of enteral feeding in end-stage dementia. Further research should examine the effect of staff attitudes toward the use of enteral tube feeding in end-stage dementia.

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None of the authors declare any conflict of interest.

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