

ABSTRACT

Nutritional risk and its predictors were assessed by evaluating longitudinal changes in body weight using data collected from elderly community-dwelling and institutionalized Canadians who participated in both phases of the Canadian Study of Health and Aging, CSHA (n=10,263). Change in body weight (% initial weight) was examined over a 5-year interval in 584 community and 237 institutionalized participants, and its predictors tested in multiple and logistic regression analyses. Average weight at CSHA-2 was 97% of initial weight at CSHA-1. Values were lower in those over 90 years and the demented. Increasing frailty on a 7-point scale ($\beta=-1.23$, $p=0.04$) predicted weight loss in institutional participants, as did difficulty in eating unaided ($\beta=4.24$, $p<0.001$) and reported loss of interest in life ($\beta=2.22$, $p<0.001$) among community subjects. Some 16% in institutions and 9% in the community were at moderate/severe nutritional risk, disproportionately represented by the oldest subjects and the demented. These analyses support the importance of assessing dietary intakes, anthropometrics, well-being and environmental predictors of aging in the elderly.

ABRÉGÉ

Nous avons évalué le risque nutritionnel et ses prédicteurs en examinant les changements longitudinaux du poids à partir de données recueillies auprès de Canadiens âgés vivant dans la communauté ou en établissement et ayant participé aux deux phases de l'Étude sur la santé et le vieillissement au Canada, ou ESVC (n=10 263). Les changements de poids (en pourcentage du poids initial) ont été évalués sur un intervalle de cinq ans chez 584 participants vivant dans la communauté et 237 asilaires. Nous avons testé les prédicteurs de changement par des analyses de régression multiple et logistique. Le poids moyen lors de l'ESVC-2 correspondait à 97 % du poids initial mesuré lors de l'ESVC-1, avec des valeurs plus faibles chez les plus de 90 ans et les personnes atteintes de démence. Les prédicteurs de perte de poids chez les participants en établissement étaient la fragilité accrue, mesurée sur une échelle de sept points ($b=-1,23$, $p=0,04$), et la difficulté à s'alimenter seul ($b=4,24$, $p<0,001$); chez les sujets vivant dans la communauté, les prédicteurs de perte de poids étaient l'affirmation d'avoir perdu le goût de vivre ($b=2,22$, $p<0,001$). Environ 16 % des participants asilaires et 9 % de ceux vivant dans la communauté présentaient un risque nutritionnel modéré ou grave, ce risque étant plus élevé chez les plus âgés et les personnes atteintes de démence. Ces analyses soulignent l'importance d'une évaluation des apports alimentaires, des mesures anthropométriques, du bien-être et des prédicteurs environnementaux du vieillissement chez les personnes âgées.

Weight Change, Nutritional Risk and Its Determinants Among Cognitively Intact and Demented Elderly Canadians

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Poor nutritional status in elderly individuals is considered a key determinant of morbidity and mortality.¹⁻⁹ Ideally, a nutrition marker should be specific and sensitive to nutritional status changes, reproducible, easy and inexpensive to apply, and widely available.¹⁰ While such a global index does not exist, longitudinal anthropometric data can furnish indicators of the relationship between body composition and health.¹¹⁻¹³

Risk of protein-energy malnutrition (PEM) increases with loss of appetite, decrease in % usual weight, and increased % weight change in the previous year.¹⁴⁻¹⁸ Estimates of nutritional risk in the older person vary considerably depending on the setting and the parameter assayed, ranging from 15% in the community to 30 to 60% in nursing homes or institutions.¹⁹⁻²²

Weight changes after age 50 are generally associated with deterioration in health, increased mortality risk after age 70²³⁻²⁵ and mobility problems.²⁵ Unintentional weight loss has been linked to greater age, poorer health, and smoking, and in men, widowhood. Education and a low usual BMI appear to be protective.²⁶ Attempts to alter weight may be related to an increase in mortality risk.²⁷ Finally, weight loss may also be associated with the onset and/or progression of Alzheimer's disease (AD).¹⁵

Weight change, assessed as % initial weight, is a potential predictor of protein-energy malnutrition and subsequent mor-

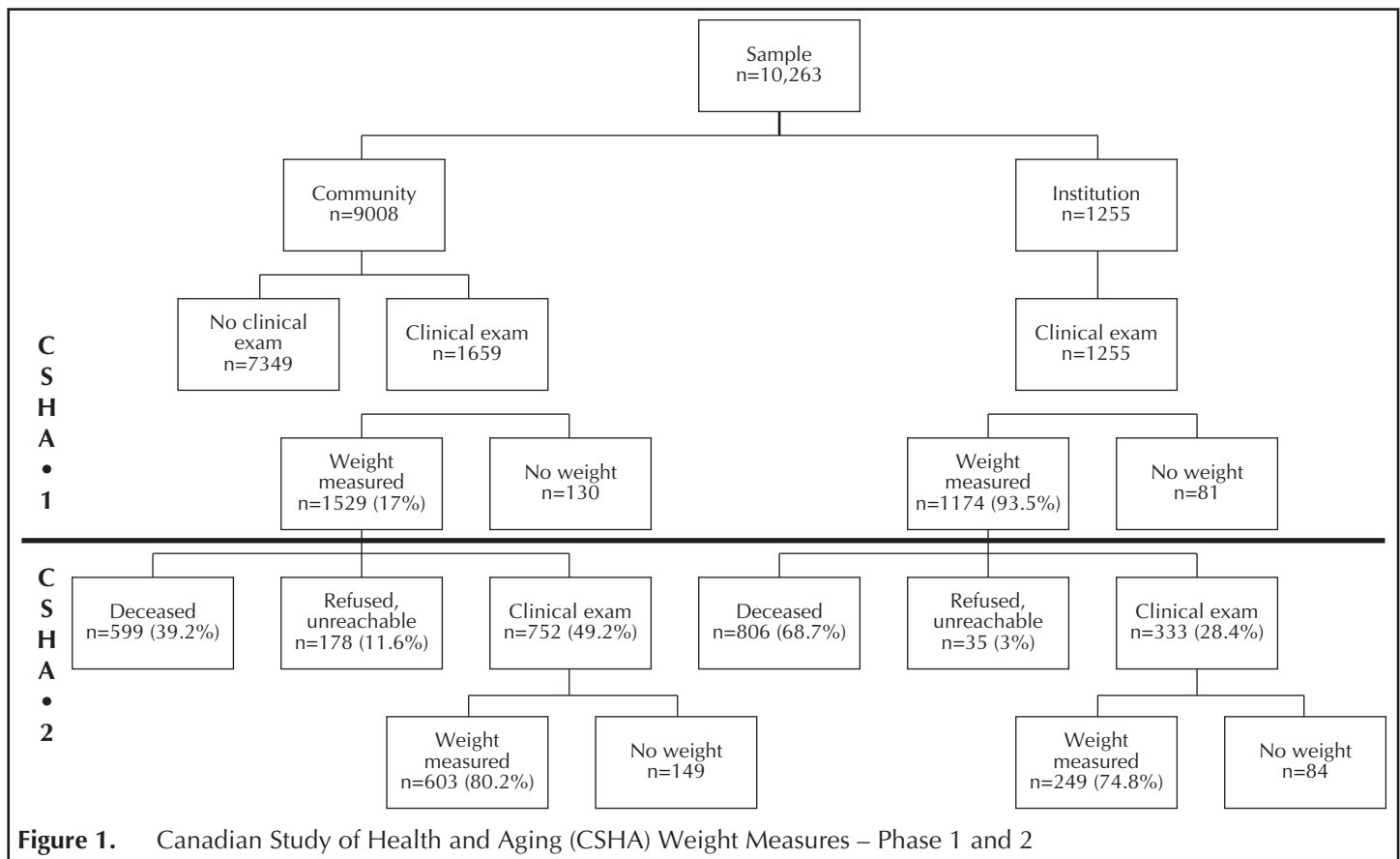
ality.^{15-18,28-30} A 4 to 5% annual weight loss is considered clinically significant, increasing mortality especially in 'involuntary weight losers'.⁸ In hospitalized patients, risk of undernutrition has classically been judged as low when current weight is 85-95% of usual weight, moderate if current weight is 75-84% of usual weight, and severe if it falls below 75%.³¹

Study context

The Canadian Study of Health and Aging (CSHA) was conducted in two phases, with a nation-wide prevalence study of dementia in 1991-92 (CSHA-1) in the aging Canadian population, and a longitudinal follow-up phase in 1996 (CSHA-2), designed to assess the incidence of dementia.³² People aged 65 years and over were randomly selected at CSHA-1 (from provincial health databases, except in Ontario where electoral lists were used), using recruitment procedures which differed for those living in the community (n=9,008; response rate 72% of those contacted) and in institutions (n=1,255; response rate 82%). At CSHA-2, surviving cohort subjects were re-contacted and re-recruited into the study, and questionnaires and procedures were re-administered. Community subjects were screened by interviewers for cognitive impairment using the "3MS",³³ a modified Mini-Mental State Examination (MMSE).³⁴ The untestable, those testing positive, and a random sample of control subjects (having a reference person willing to complete certain study instruments) underwent a clinical examination. All institution participants who met inclusion criteria (spoke English or French, lived in study area) took part in the clinical examination. The final cognitive diagnosis was reached by consensus of the clinician, another physician, and a neuropsychologist, aided by the

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nurse who had administered the Clinical questionnaire, using DSM-III-R criteria.³⁵ Participants not consistent with dementia criteria but who manifested cognitive impairment were termed “cognitively-impaired, not demented” (CIND), by exclusion.

The present study sought to 1) assess nutritional risk, defined as % initial weight (baseline weight at CSHA-1), by evaluating longitudinal changes in body weight over the 5-year interval between the two study phases, and 2) elucidate predictors of nutritional risk, defined as extent of weight loss from CSHA-1 to CSHA-2.

METHODS AND MATERIALS

Data sources and subjects

Data were extracted from the CSHA-2 Screening and Clinical questionnaires. The subject’s ability to feed him/herself, and indices relating to depression (factors with impact on dietary intake in the elderly) were taken from the CAMDEX (Cambridge Mental Disorders of the Elderly Examination) questionnaire³⁶

administered at CSHA-2. Selected activities of daily living (ADLs), or Instrumental ADLs (IADLs) were derived from the Older Americans Resources and Services (OARS) Multidimensional Functional Assessment Questionnaire³⁷ (ability to eat unaided, shopping, meal preparation). Data were self-reported by able participants, or by proxy when subjects were unable to respond for themselves. Weight was measured by a nurse during the clinical examination, following procedures established at training, and values were taken from CSHA-1 and CSHA-2 datasets. In CSHA-1, weight was measured in 1,529 (17%) community-based subjects and 1,174 (93.5%) institutional subjects. In CSHA-2, 752 community subjects and 333 institutional subjects were reassessed, and weight was remeasured in 603 (80.2%) and 249 (74.8%) respectively. Participants were lost to follow-up in Phase 2 mainly due to death (39.2%-community, 68.7%-institutions) or refusal/non-contacts (11.6%-community, 3%-institutions) (Figure 1).

Analyses

Analyses were conducted separately for institution and community subjects and subcategories of dementia were tested for internal differences. A systematic review verified participants’ weight data for clinical and logical plausibility. Consequently, 31 subjects with unacceptable values (substantial and implausible divergence in weight from CSHA-1 to CSHA-2, or unlikely weight for gender or height) were excluded from analysis.

After examining longitudinal changes in weight, height, and BMI,³⁸ weight change over the 5-year interval was re-assessed as % initial weight. Predictors of weight change (or loss) were tested in multiple regression analyses in each sub-sample after assessing relationships between the dependent and independent variables in bivariate analyses. Independent variables were age, sex, 3MS score, cognitive diagnosis at CSHA-2, study region, presence of a spouse and/or recent bereavement, self-reported weight gain or loss, functional vulnerability, ability to eat unaided, appetite, depression (including self-reported

TABLE I
Weight Change (% Initial Body Weight at CSHA-1) at CSHA-2

Subjects, by Sub-groups (n)	Mean % \pm SD (P10, P50, P90)
Institution	
All (237)	97.1 \pm 12.6 (79.9; 96.4; 113.8)
Sex	
Male (58)	97.1 \pm 12.2 (80.8; 96.7; 113.1)
Female (179)	97.1 \pm 12.8 (79.7; 96.0; 114.2)
Age at CSHA-2 (years)	
70-79 (64)	97.5 \pm 12.0 (81.9; 96.8; 115.3)
80-89 (114)	98.7 \pm 12.8 (82.0; 97.5; 114.3)
90+ (59)	93.6 \pm 12.4 (77.1; 92.8; 109.8)
Diagnosis† (CSHA-2)	
Normal (42)	100.8 \pm 10.7 (88.8; 101.1; 115.5)
CIND‡ (76)	97.3 \pm 13.2 (80.5; 96.1; 114.1)
Demented (119)	95.6 \pm 12.6 (78.1; 95.6; 113.0)
Community	
All (584)	97.0 \pm 9.0 (85.3; 97.2; 107.9)
Sex	
Male (236)	97.5 \pm 8.5 (87.1; 97.9; 107.9)
Female (348)	96.7 \pm 9.3 (84.1; 97.0; 107.9)
Age at CSHA-2 (years)	
70-79 (154)	97.7 \pm 8.7 (85.5; 98.4; 107.6)
80-89 (323)	97.1 \pm 8.4 (86.1; 97.1; 107.6)
90+ (107)	95.8 \pm 10.9 (82.3; 95.8; 110.2)
Diagnosis† (CSHA-2)	
Normal (259)	97.8 \pm 7.1 (88.0; 98.5; 105.7)
CIND‡ (168)	97.3 \pm 9.1 (85.3; 96.4; 110.2)
Demented (157)	95.4 \pm 11.1 (79.9; 95.2; 109.1)

† The final cognitive diagnosis was reached by consensus of the clinician, another physician, and a neuropsychologist, aided by the nurse who had administered the Clinical questionnaire, using DSM-III-R criteria (American Psychiatric Association, 1987).
‡ Cognitively impaired, not demented.

interest in life), frailty (assessed via a 7-category ascending scale derived from clinical observation, and ranging from “very fit” to “completely dependent” – see Appendix), income, and for community participants, institutionalization since CSHA-1. Region of residence (five geographical regions in Canada, potentially

reflecting cultural, environmental or other regional diversity) were examined as additional possible explanatory variables.

Risk of undernutrition was categorized as none (current weight >95% of usual weight), low (current weight 85-95% of usual weight), or moderate/severe (<85% of usual weight), modified from the more

severe definitions published by Blackburn et al.³¹ This less stringent approach allows for differences between hospitalized patients and home-dwellers, making few assumptions about baseline (CSHA-1) body weight. However, it does assume that negative weight change in the elderly is a health risk factor.²³⁻²⁵ To examine the relationship between weight loss and AD, it was stratified by age, sex and cognitive diagnosis.

Finally, risk of undernutrition was dichotomized into absence (% initial weight >95%) or presence of risk (% initial weight \leq 95%), and logistic regression analyses were carried out for each sub-sample, with % of initial weight as the dependent variable. Potential predictors of weight change leading to undernutrition included age, cognitive diagnosis at CSHA-2, study region, ability to eat independently, loss of appetite, weight loss, depression, self-reported interest in life, frailty, and for community subjects, ability to shop and bereavement. Analyses were conducted using SAS V6.12 (SAS Institute, Cary, NC) and SPSS (SPSS V8 Inc., Chicago, IL).

RESULTS

Subjects retained the recruitment status (institution or community) established at CSHA-1, whatever their situation during CSHA-2. Weight data were available for 249 institution and 603 community sub-

TABLE II
Predictors of Weight Change (% Initial Body Weight at CSHA-1) at CSHA-2

Subjects and Predictors	Coefficient (β)	Standard Error	Standardized Coefficient (β)	t	p
Institution†					
Intercept	108.30	3.09		35.11	0.000
New criteria frailty scale¶ (7 categories with increasing degree of frailty)	-1.23	0.59	-0.14	-2.08	0.039
Region (reference: Quebec)					
Atlantic	-3.41	2.80	-0.10	-1.22	0.225
Ontario	-9.02	2.51	-0.30	-3.60	0.000
Prairies	-4.54	2.65	-0.14	-1.72	0.087
British Columbia	-5.62	2.50	-0.20	-2.25	0.026
Community‡					
Intercept	85.12	2.30		36.96	0.000
Ability to eat unaided (0=completely unable, 1=with some help, 2=without help)	4.24	1.07	0.17	3.95	0.000
Reported loss of interest in life (1=yes, 2=no)	2.22	0.89	0.11	2.51	0.013

† Full model included age (3 categories), cognitive diagnosis (3 categories), new criteria frailty scale (7 categories); region (nominal variable) forced into model. (n=236; $r^2=0.093$; $F=4.74$, $p=0.000$)

‡ Full model included cognitive diagnosis (3 categories), reported loss of interest in life, reported depressed, new criteria frailty scale (7 categories), ability to eat unaided. (n=560; $r^2=0.047$; $F=13.82$, $p=0.000$)

¶ A 7-category ascending scale derived from clinical observation, ranging from “very fit” to “completely dependent”.

jects. Review of these values resulted in retention of 237 (95.2%) in institutions, and 584 (96.8%) community subjects (Figure 1).

In both groups, CSHA-2 weight was, on average, $97.1 \pm 12.6\%$ of initial (CSHA-1) weight. Persons aged 90+ years, and those diagnosed as demented had the lowest values in each series, especially in institutions ($93.6 \pm 12.4\%$ and $95.6 \pm 12.6\%$, respectively). As the median values were virtually identical to the means in both sub-samples, 50% of subjects were within 97% or more of their initial weight at CSHA-1 when reweighed at CSHA-2 (93% for those aged 90+ in institutions). However, a non-negligible proportion of participants were at some risk of undernutrition (Table I).

Models emerging from multiple regression analyses on predictors of weight change are given in Table II. Among institution participants, increasing frailty was a predictor of greater weight loss in comparison to initial weight ($\beta=-1.23$, $p=0.04$). Residence in a region other than Quebec was inversely related to % initial body weight. This was statistically significant for participants in Ontario and in British Columbia ($\beta=-5.62$, $p=0.03$). In community subjects, ability to eat independently ($\beta=4.24$, $p<0.001$) and reported sustained interest in life ($\beta=2.22$, $p<0.01$) predicted a higher % initial weight at CSHA-2.

Among institution subjects overall, 57% were assessed to be at no risk, 27% at low risk, and 16% at moderate/severe risk of undernutrition. A significantly greater proportion of those aged 90+ were in the moderate/severe risk category compared to other age groups. There was a significant, progressive inverse trend of increased nutritional risk among demented subjects, compared to CIND, compared to those diagnosed as cognitively normal (Table III). In community subjects, smaller proportions were at risk, and progressive departure from normal cognitive diagnosis to CIND to demented was related to highly significant greater proportions of subjects at moderate/severe nutritional risk. Although not significant, proportionately more women appeared to be at moderate/severe risk of undernutrition compared to men (Table IV). In institutions (where 71% of those aged 90+ were

TABLE III
Risk of Undernutrition (Assessed from % Initial Weight): Institution Subjects

Subjects, by Sub-groups	Risk of Undernutrition [†]			Total
	No Risk ($\geq 95.0\%$)	Low Risk (85.0-94.9%)	Moderate and Severe Risk ($< 85.0\%$)	
	n (%)	n (%)	n (%)	
Sex				
Male	36 (62)	14 (24)	8 (14)	58
Female	100 (56)	50 (28)	29 (16)	179
Age at CSHA-2 (years)*				
70-79	39 (61)	17 (27)	8 (13)	64
80-89	73 (64)	27 (24)	14 (12)	114
90+	24 (41)	20 (34)	15 (25)	59
Diagnosis [‡] (CSHA-2)**				
Normal	32 (76)	7 (17)	3 (7)	42
CIND [¶]	42 (55)	24 (32)	10 (13)	76
Demented	62 (52)	33 (28)	24 (20)	119
All	136 (57)	64 (27)	37 (16)	237

[†] Modified from Blackburn et al., 1977.

[‡] The final cognitive diagnosis was reached by consensus of the clinician, another physician, and a neuropsychologist, aided by the nurse who had administered the Clinical questionnaire, using DSM-III-R criteria (American Psychiatric Association, 1987).

[¶] Cognitively impaired, not demented.

* $\chi^2=10.2$, $df=4$; $p<0.05$.

** $\chi^2=9.3$, $df=4$; $p<0.05$.

TABLE IV
Risk of Undernutrition (Assessed from % Initial Weight): Community Subjects

Subjects, by Sub-groups	Risk of Undernutrition [†]			Total
	No Risk ($\geq 95.0\%$)	Low Risk (85.0-94.9%)	Moderate and Severe Risk ($< 85.0\%$)	
	n (%)	n (%)	n (%)	
Sex				
Male	150 (64)	71 (30)	15 (6)	236
Female	209 (60)	99 (28)	40 (12)	348
Age at CSHA-2 (years)				
70-79	102 (66)	38 (25)	14 (9)	154
80-89	199 (62)	96 (30)	28 (9)	323
90+	58 (54)	36 (34)	13 (12)	107
Diagnosis [‡] (CSHA-2)*				
Normal	177 (68)	69 (27)	13 (5)	259
CIND [¶]	102 (61)	51 (30)	15 (9)	168
Demented	80 (51)	50 (32)	27 (17)	157
All	359 (62)	170 (29)	55 (9)	584

[†] Modified from Blackburn et al., 1977.

[‡] The final cognitive diagnosis was reached by consensus of the clinician, another physician, and a neuropsychologist, aided by the nurse who had administered the Clinical questionnaire, using DSM-III-R criteria (American Psychiatric Association, 1987).

[¶] Cognitively impaired, not demented.

* $\chi^2=21.317$, $df=4$; $p=0.000$.

demented), a significantly higher proportion at risk were demented, compared to those diagnosed as CIND or normal. In community participants (33% were aged 90+), higher (not significant) proportions of 90+ CIND and demented were at nutritional risk (data not shown).

Finally, increasing frailty predicted a significantly greater risk of undernutrition expressed as present ($< 95\%$ of initial weight) or absent ($\geq 95\%$ of initial weight). In all subjects, reporting a sustained interest in life heralded a diminished risk of undernutrition, and in the community group, reporting a consistent

appetite was also a positive factor in diminishing risk of undernutrition (Table V).

DISCUSSION

The present analyses examined weight change in a subset of elderly Canadians who had participated in both phases of the CSHA. An average weight loss of 3% of initial weight occurred over the 5-year interval between CSHA-1 and CSHA-2, with greater losses of baseline body weight observed in participants over 90 years of age at CSHA-2, and in the demented. These findings concur with the literature.³⁹⁻⁴³

TABLE V
Predictors of Risk of Undernutrition† at CSHA-2

Subjects and Predictors	Coefficient (β)	Standard Error	Wald	df	p	Exp (β)	95% CI Exp (β)
Institution‡							
Constant	-0.54	0.79	0.46	1	0.498		
Reported loss of interest in life (1=yes, 2=no)	-0.63	0.29	4.87	1	0.027	0.53	0.30-0.93
New criteria frailty scale§ (7 categories with increasing degree of frailty)	0.22	0.11	4.40	1	0.036	1.25	1.01-1.54
Community¶							
Constant	2.65	0.84	10.06	1	0.002		
Reported loss of appetite (1=yes, 2=no)	-1.52	0.33	21.61	1	0.000	0.22	0.12-0.42
Reported loss of interest in life (1=yes, 2=no)	-0.58	0.25	5.66	1	0.017	0.56	0.34-0.90

† from logistic regression (0= \geq 95% initial weight at CSHA-1, 1= <95% initial weight)

‡ Model selection (backward LR method) initially included age (3 categories), cognitive diagnosis (nominal variable; normal, CIND, demented), region (nominal variable 5 categories), reported loss of interest in life, new criteria frailty scale (7 categories). (n=249; -2LL=289.4, $\chi^2=12.46$, df=5, p=0.029)

¶ Model selection (backward LR method) initially included age (years), cognitive diagnosis (nominal variable; normal, CIND, demented), difficulty feeding self, reported loss of interest in life, reported depressed, reported weight loss, reported loss of appetite, clinical impression of depression, new criteria frailty scale. (n=603; -2LL=606.6, $\chi^2=57.38$, df=3, p=0.000)

§ A 7-category ascending scale derived from clinical observation, ranging from "very fit" to "completely dependent".

While the mean weight loss values would appear to augur favourably for health outcome, there was a greater risk of undernutrition due to weight loss in the very elderly (90+ years) living in institutions, in the demented compared to CIND, and in CIND compared to cognitively normal participants in both recruitment groups. In the community, a diagnosis of dementia was most strongly related to risk of undernutrition due to weight loss. These findings support those of Wallace et al.,⁸ who observed that mortality increased in elderly weight-losing subjects (regardless of intention to lose weight), a phenomenon expected to increase with advancing age. Acute and chronic disease and psychosocial factors are believed to be the main causes of unintentional weight loss,²⁴⁻²⁷ especially among those in long-term care.²⁸ Since "intention" could be viewed as a potential marker for weight-related illness,²⁶ weight history is germane to understanding the origin of weight loss and its potential consequences which foster health risks in those over the age of 70 years.^{23,24,44,45} Still, healthy elderly do not always lose weight over time: among male participants in the New Mexico Aging Process Study weight did not change, but women lost an average of 0.14 kg annually over the 9-year study period.⁴⁶

In institutionalized participants, multiple regression analyses showed that increasing frailty predicted greater weight loss, as

did residence in Ontario or British Columbia compared to Quebec. We are unable to explain this latter finding, which may be an artifact of the way the dummy variable representing "region" was constructed, or may reflect cultural or environmental disparities among elderly Canadians living in a country with regional distinctions. However, as Quebecers were smaller and had lower body weights at CSHA-1 than Canadians in other regions,⁴⁷ perhaps they simply had less weight to lose. In subjects living in the community during CSHA-1, ability to eat unaided and a self-reported sustained interest in life emerged as positive predictors of % initial weight. In some (data not shown), reported ability to eat unaided was a negative predictor of % initial weight, suggesting more weight loss. Perhaps those who reported being able to eat unaided could do so, but they were unable to procure an adequate diet.

This study is limited in that the present analyses did not consider CSHA-1 decedents. These data thus reflect body weight in the surviving members of the cohort. Also, as very elderly subjects were oversampled in the community, the sample may not represent home-dwelling elderly. Since health status at the time of these analyses was not considered, we could not distinguish between age-related decreases in body weight (e.g., loss of lean body mass) and those caused by illness (such as cancer-

related weight loss or being confined to wheelchair or bed), or even deliberate and desirable weight loss. It must also be remembered that the models emerging from the multiple regression analyses were only weakly predictive of weight change, with variance accounted for by the models of 9.3% (institution) and 4.7% (community). However, the main predictors of risk of weight loss (and consequently, risk of undernutrition) emerging from logistic regression analyses were frailty and a reported diminished interest in life (all subjects), and loss of appetite (community participants), factors with logical coherence. It may therefore be postulated that a lack of interest in life (a marker of depression) together with a loss of appetite (associated with depression or other illness) are indicators of weight loss, concurrent undernutrition and increasing frailty, which lead to morbidity and poor quality of life. Clearly, information on food habits, dietary intakes and the dietary environment of participants could have shed more light on the anthropometric outcome measures.

In order to foster quality of life and maintenance of health and help them remain in their homes and avoid institutionalization, community-dwelling elderly should be screened regularly for indicators of nutritional status, including dietary adequacy, meal preparation ability, other functional capacities and food security.¹¹ Hospitalized patients and residents in

long-term care must also be assessed regularly with the goal of maintaining body weight.²⁸ Finally, epidemiologic studies in elderly populations should collect longitudinal data on diet and anthropometric measurements.³⁹

These analyses of weight change and nutritional risk over time in this cohort evoke predictors of nutritional status in aging Canadians that could be amenable to intervention, and point to the importance of including information on dietary and nutritional intakes, anthropometric indices, well-being and environmental predictors of aging in the elderly.

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Appendix New Criteria Frailty Scale (CSHA-2 Clinical Assessment User's Manual, 1997)

- 1 Very fit, well elderly. Robust, active, energetic, well motivated and fit. Such subjects commonly exercise regularly. They are the most fit group for age.
- 2 Well elderly, without active disease, but less fit than group 1.
- 3 Well elderly, with treated comorbid disease. In comparison with group 2, disease is present in these subjects. In comparison with group 4, the disease symptoms in group 3 subjects are well controlled.
- 4 Apparently vulnerable elderly. While not frankly dependent, such subjects commonly complain of being "slowed up" and/or commonly have disease symptoms.
- 5 Frail elderly with some Instrumental Activities of Daily Living (IADL) dependence.
- 6 Frail elderly, with both IADL and ADL dependence.
- 7 Frail elderly, with complete ADL dependence (or terminally ill).

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COMING EVENTS ACTIVITÉS À VENIR

To be assured of publication in the next issue, announcements should be received by **May 15, 2001** and valid as of **June 29, 2001**.
Announcements received after **May 15, 2001** will be inserted as time and space permit.
Pour être publiés dans le prochain numéro, les avis doivent parvenir à la rédaction avant le **15 mai 2001** et être valables à compter du **29 juin 2001**. Les avis reçus après le **15 mai 2001** seront insérés si le temps et l'espace le permettent.

Stanier Society/Société Stanier Symposium
Correlation Between Molecular and Clinical Aspects of Infections
11 May 2001
Faculté de médecine vétérinaire (FMV)
Université de Montréal
Contact:
Serge Messier
3200 Sicotte, Saint-Hyacinthe, Québec, J2S 7C6.
E-mail: serge.messier@umontreal.ca
Tel. 450-773-8521 ext. 8373 Fax. 450-778-8113

National Immunization Awareness Week
Semaine nationale de promotion de la vaccination
13-19 May/mai 2001
www.immunize.cpha.ca

e-Health 2001: The Future of Health Care
Co-presented by CIHI and COACH
26-29 May 2001 Toronto, ON
A unique forum for all health professionals to discuss, share and discover new technologies, telehealth, e-commerce, electronic health records, e-procurement, venture capital, privacy, e-learning, evidence-based decision support and even government health information initiatives.
Contact:
http://www.e-health2001.com
Toll-free 1 888 253-8554 or Tel: 416-979-5551

Practise, Standards and Ethics - Across Disciplines
Annual Conference on Shared Mental Health Care, organized by St. Joseph's Health Centre
7-8 June 2001 Toronto, ON
Contact:
Conference Organizing Committee
St. Joseph's Health Centre, Attn: Fil Sibbio
Tel: 416-530-6599 website: www.shared-care.ca

Showcasing Our Past: Creating Our Future
Alberta Public Health Association Conference
21-22 June 2001 Red Deer, AB
Keynote speaker: Dr. David Butler-Jones, CPHA President; Andrea Ellis, Division of Enteric, Foodborne and Waterborne Diseases, Health Canada, will present on Walkerton: A Preventable Tragedy. Other plenary speakers: Dr. Karen Grimsrud, Deputy Provincial Health Officer, Alberta Health and Wellness; Dr James Talbot, Provincial Laboratory of Northern Alberta; Larry Svenson, Health Surveillance Branch, Alberta Health and Wellness.
Contact:
E-mail: info@apha.ab.ca
Website: www.apha.ab.ca

Creating Conditions for Health/Créer les conditions de la santé
CPHA 92nd Annual Conference/92^e Conférence annuelle de l'ACSP
21-24 October 2001 Saskatoon, SK
Contact/Contacter:
CPHA Conference Department
Tel: 613-725-3769 Fax: 613-725-9826
E-mail: conferences@cpha.ca www.cpha.ca

CALL FOR ABSTRACTS
52nd Annual Ontario Public Health Association Conference
Harvesting Health: Embracing Tradition and Change
5-7 November 2001 Kitchener, ON
Mail abstracts to:
Bryan Embree
OPHA Conference Abstracts Committee
c/o Waterloo Region Community Health Department
99 Regina Street South, P.O. Box 1633
Waterloo, ON N2J 4V3
E-mail: ebryan@region.waterloo.on.ca
Deadline for abstracts: 15 May 2001

CALL FOR ABSTRACTS
Canada's Fifth National Conference on Asthma and Education (ASED 5)
Canadian Network for Asthma Care (CNAC)
29 November - 1 December 2001 Toronto, ON
Contact:
A.Les McDonald, Executive Director, CNAC
Tel: 416-224-9221 Fax: 416-224-9220
E-mail: ased@cnac.net www.cnac.net
Deadline for abstracts: 30 June 2001

APPEL DES COMMUNICATIONS / CALL FOR ABSTRACTS
6^e Conférence mondiale sur la Prévention et contrôle des traumatismes / 6th World Conference on Injury Prevention and Control
Traumatismes, suicide et violence : construire un savoir, des politiques et des pratiques pour promouvoir un monde en sécurité / Injuries, Suicide and Violence: Building Knowledge, Policies and Practices to Promote a Safer World
12-15 mai/May 2002 Montréal, QC
Contacter / Contact:
Congress Secretariat
511, place d'Armes, # 600
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Tel: 514-848-1133 or
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Fax: 514-288-6469
E-mail: trauma@coplanor.qc.ca
www.trauma2002.com

Date limite pour la soumission des communications / Deadline for submission of abstracts: 1 septembre / September 2001