

Use of dietary and herbal
supplements among
inpatients:
What have we learned and
what can be learned?

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DHS use in hospitalized patients

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Changes in Herb and Dietary Supplement Use in the US Adult Population: A Comparison of the 2002 and 2007 National Health Interview Surveys

Chung-Hsuen Wu, BPharm, MHPA, PhD¹; Chi-Chuan Wang, BPharm, MHPA, PhD¹; and Jae Kennedy, PhD²

Use of and Communication About Dietary Supplements Among Hospitalized Patients

Laura A. Young, MD, PhD^{1,3}, Ketura M. Trotter, PA, MPH², and Susan A. Gaylord, PhD²

Use of non-steroidal, non-mineral (NVNM) supplements by hospitalized internal medicine patients and doctor-patient communication

Noah Samuels^a, Y. Zisk-Rony^{b,1}, Shoshana Zevin^c, Evy L. Becker^a, Amos M. Yinnon^d, Menachem

~ 50%



Culturally-sensitive questionnaires

סקר שימוש בצמחים ותוספים ברפואה משלימה בחולים מאושפזים



לון זה אנו רוצים ללמוד מהי דעתך לגבי שימוש בצמחים ותוספי יימה. נא להתייחס רק לצמחים ותוספים (ויטמינים וכו') לטיפול ואית שלך.

אנו מודים לך על שיתוף הפעולה!

1. שנת לידה: _____
2. מיין: 1. זכר 2. נקבה

Data were provided by 691 of 895 patients approached during hospital admission (77.2% response rate). Of the 691 participants providing data, **359 (51.9%) reported using DS** in the year prior to the survey. Of the 359 participants using

Table 1 Demographic characteristics of respondents.

Characteristics	DS users (%) N= 359	DS users disclosed by standard question n= 168	DS users disclosed by keywords n= 191	P value*
Sex ^a	229:130	105:63	124:67	NS
Female:male (%)	(63.8:36.2)	(62.5:37.5)	(64.9:35.1)	
Mean age in years ± SD (median)	60.5 ± 18.5 (63)	58.2 ± 18.9 (58.5)	62.6 ± 17.9 (65)	.027
Education				
Elementary school	72 (20.1%)	15 (8.9%)	57 (30%)	<.0001
High school	137 (38.3%)	56 (33.3%)	81 (42.6%)	<.0001
Academic	149 (41.6%)	97 (57.7%)	52 (27.4%)	<.0001
Place of residence				
Urban	283 (78.8%)	152 (90.5%)	131 (68.6%)	<.0001
Rural	76 (21.2%)	16 (9.5%)	60 (31.4%)	
Religion				
Jewish	266 (74.1%)	146 (86.9%)	120 (62.8%)	<.0001
Non-Jewish ^a	93 (25.9%)	22 (13.1%)	71 (37.2%)	
Country of birth				
Israel	171 (47.6%)	80 (47.6%)	91 (47.6%)	NS
Other country	188 (52.4%)	88 (52.4%)	100 (52.4%)	

NS, non-significant p > .05 SD = standard deviation.

^a Majority of non-Jewish respondents (85 of 93) were self-identified as Arab Muslims, Christians, and Druze.

* p-Value relates to comparison of DS users disclosed by standard question vs. disclosed by keywords.

האם השתמשת בשנה האחרונה בצמחים או תוספים של רפואה

משלימה? להקיף: ענה בחיוב לשאלה זו ענה בשלילה

לא- נא לעבור לדיווח הסוקר (מילות מפתח ושם)

[כך- נא לעבור לשאלה 7 (השאלון מתפצל לשניים ע"מ לאפשר רישום של יותר מתוסף

צמח אחד. אם יש יותר משני תוספים נא לסמן בשאלון נוסף עם פרטי הנבדק ולשדך יחד)



הבעלות והאחריות על המידע והתכנים המופיעים במצגת שייכים לכותב בלבד ואין חברת ברא צמחים אחראית למהימנותם או לדיוקם של תכנים אילו, והם אינם מהווים ייעוץ מקצועי או התוויה רפואית

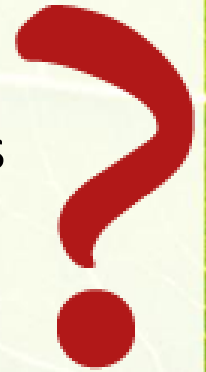
תהיה לי ברא

Who are hospitalized DHS users?

Main populations using DHS	
Socio-demographic characteristics	Women – OR range = 2.5-2.9 Elderly – OR range = 1.02-1.5 Higher education – OR = 2.4
Medical conditions	Psychiatric – OR = 3.7 Hematological – OR = 13.3 Benign prostatic hypertrophy – OR = 4.6 Diabetes mellitus – OR = 2.7

Reasons for use:

- General well-being
- Health promotion
- Medical conditions

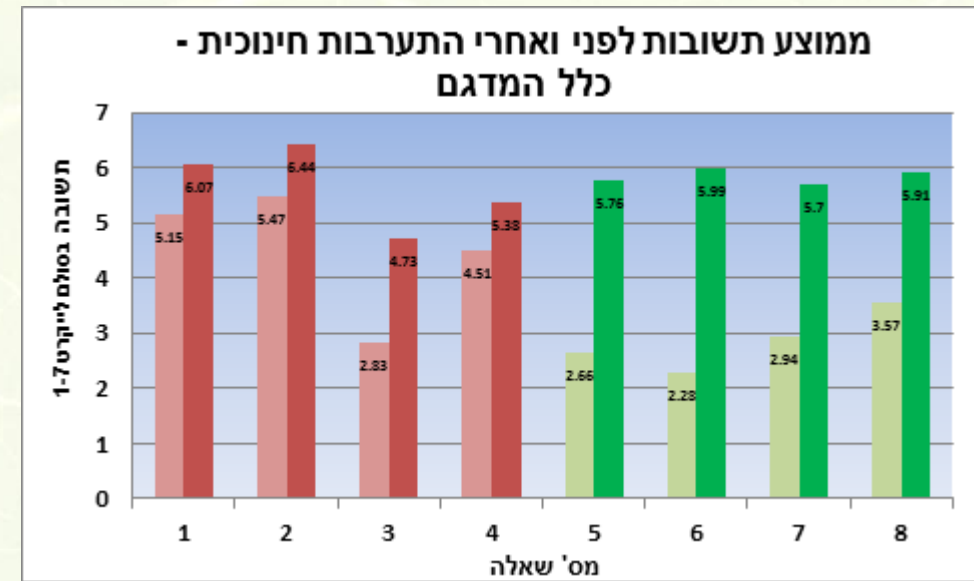


Why?

Low patient report to physicians:

- The **physician** does not understand DHS medicine
 - It is **natural**, it cannot harm
 - Fear of **physician** reaction

Low documentation in medical files:





Main risks of DHS use

Interactions Between Dietary Supplements in Hospitalized Patients

Ilana Levy, Samuel Attias (MPH), Eran Ben Arye (MD), Lee Goldstein (MD), Elad Schiff (MD)

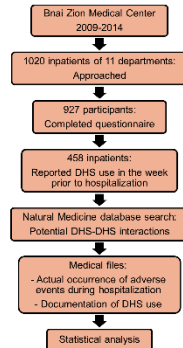
BACKGROUND

- The consumption of dietary and herbal supplements (DHS) has recently received research attention.
- Potential DHS-drug interactions have been studied in hospitalized people.
- DHS-DHS interactions have seldom been evaluated among hospitalized patients.

We evaluated potential DHS-DHS interactions among inpatients.

METHODS

Research Protocol



Patient Characteristics

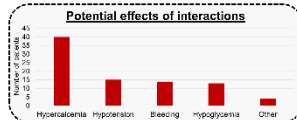
Characteristics	DHS users
Gender	Female (98.6%)
Mean age	61.2±19.4
Religion	Jewish (71.8%)
Residence	Urban (76.7%)
Country of birth	Israel (51.3%)
Education	
No education	5.0%
Elementary school	13.8%
High school	38.2%
University	42.6%
Comorbidities	
Metabolic	53.1%
Cardiovascular	51.7%
Endocrinologic	28.4%
Neuro-Oncologic	20.7%
Surgery	52.2%
Emergency hospitalization	55.0%

CONCLUSIONS

- Potential DHS-DHS interactions are common in inpatients.
- They are widely ignored by physicians and under-reported in medical files.
- They may lead to hospitalization or worsen existing medical conditions.
- The causal relationship between potential interactions and actual adverse events should be further studied.

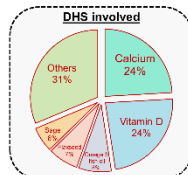
RESULTS

Potential DHS-DHS interactions identified in **12.9%** of DHS users (**83 interactions**).



The most common potential effects of interactions were hypocalcemia (40 patients), hypoparathyroidism (35 patients), bleeding (14 patients) and hypoglycemia (15 patients).

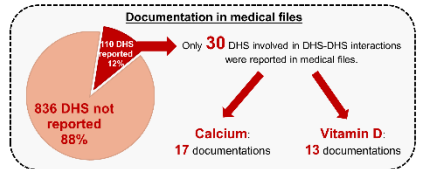
Three adverse events (two bleeding episodes, and one hypotension) probably occurred due to DHS-DHS interactions.



DHS commonly involved in potential interactions included calcium (40 interactions), vitamin D (38 interactions), Omega-3 fish oil (13 interactions), flaxseed (12 interactions) and Sage (7 interactions).

Female gender (OR=3.20, p=0.005, 95% CI=1.43-7.15) and higher number of used DHS (OR=2.11, p<0.0001, 95% CI=1.68-2.66) were associated with DHS-DHS interactions.

In 88.9% of DHS users, DHS use was not reported in medical files. Only 18% of the DHS involved in interactions were documented.



Drug Interactions with Dietary and Herbal Supplements in Hospitalized Patients

Levy I., Attias S. (MPH), Ben Arye E. (MD), Goldstein L. (MD), Schiff E. (MD)

BACKGROUND

- Dietary and herbal supplement (DHS) consumption increased in recent years, especially in hospitalized patients.
- Their use is under-reported to medical teams, although they may lead to potentially dangerous interactions between DHS and prescribed medications.
- In this study we evaluated DHS-drug interactions during hospitalization and characterized DHS users at risk for interactions.



PERIOPERATIVE RISKS OF DIETARY AND HERBAL SUPPLEMENTS

- 230 (44%) of the 526 interviewed patients reported using DHS in the last week.
- 38 patients with potential DHS/anesthesia interactions:

DHS	Action	Mechanism of action	N
Sage	Increased sedative toxicity	Dual CNS depressant activity	28
Sage	Decreased blood level of anesthesia	CYP 2E1 induction	28
Chamomile	Prolonged sedation	Additive effects	12
Green tea	Reduced hypnotic effects of anesthesia	Opposite effect of caffeine	7
Melissa officinalis	Increased sedation	Additive effects	3

- 24 patients with potential DHS/antithrombotic drug interactions:

DHS	Mechanism of action	N
Omega-3 fish oil	Additive Antiplatelet	13
Green Tea	Additive Antiplatelet	3
Magnesium	Additive Antiplatelet	3
Rosemary	Additive Antiplatelet	3
Chamomile	CYP 2C9 inhibition	2
Flaxseed	Additive Antiplatelet	2
Ginger	Thromboxane inhibition	2
Sage	CYP 2C9 inhibition	1



Problem list...

- **High rate of DHS use:** 50% of inpatients
- **Communication gap:** Patients / Physicians / CAM practitioners
 - **Low documentation:** 11% of DHS users
 - **Safety issues:** Interactions, Adverse events



Solutions

Integrative medicine and clinical pharmacology consultants

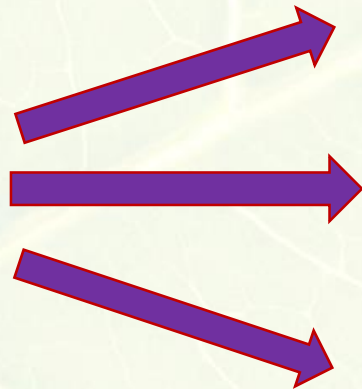
Educational interventions

Computer-based interventions

DHS database

DHS safety issues

Documentation



Existing studies from Bnai-Zion

- Qadour E, Ben-Arye E, Goldstein L, Attias S, Schiff E. Dietary supplements use during hospitalization. *Harefuah*. 2015; 154(1):39-42.
- Ben-Arye E, Halabi I, Goldstein L, Attias S, Schiff E. Asking patients the right questions about herbal and dietary supplements: Cross-cultural perspectives. *Complement Ther Med*. 2014; 22(2):304-10.
- Wirsansky I, Attias S, Ben-Arye E, Schiff E. Educational interventions for developing awareness and imparting skill questioning about use of dietary and herbal supplements among hospitalized patients. *Fundamental Sciences Theses*. Technion. 2012.
- Attias S, Levy I, Ben-Arye E, Matter I, Sroka G, Grimberg O, Schiff E. Consumption of herbal and dietary supplements in patients undergoing bariatric surgery: cross-sectional prospective study. *Bariatr Surg Pract Patient Care*. 2016 March; 11(1):30-36.
- Ben-Arye E, Attias S, Levy I, Goldstein L, Schiff E. Mind the gap: Disclosure of dietary supplement use to hospital and family physicians. *Patient Educ Couns*. 2016 Aug.
- Levy I, Attias S, Ben-Arye E, Goldstein L, Schiff E. Interactions between dietary supplements in hospitalized patients. *Intern Emerg Med*. 2016 Oct. 11(7):917-27.
- Levy I, Attias S, Ben-Arye E, Goldstein L, Schiff E. Potential drug interactions with dietary and herbal supplements in hospitalized patients. *Intern Emerg Med*. 2016 Oct 5.
- Levy I, Attias S, Ben-Arye E, Goldstein L, Matter I, Somri M, Schiff E. Perioperative risks of dietary and herbal supplements. *World J Surg*. 2016 Oct.
- Levy I, Attias S, Ben-Arye E, Goldstein L, Schiff E. Adverse events associated with interactions with dietary and herbal supplements among inpatients. *Br J Clin Pharmacol*. 2016 Oct 19.



Future studies

סקר שימוש בצמחים ותוספים ברפואה משלימה בחולים מאושפזים



בשאלון זה אנו רוצים ללמוד מהי דעתך לגבי שימוש בצמחים ותוספי משלימה. נא להתייחס רק לצמחים ותוספים (ויטמינים וכו') לטיפול הרפואתי שלך.

אנו מודים לך על שיתוף הפעולה!

1. שנת לידה: _____
2. מין: 1. זכר 2. נקבה
3. שייכות דתית: 1. יהודי 2. ערבי מוסלמי 3. ערבי נוצרי 4. נוצרי שאינו ערבי 5. דרוזי 6. אחר
4. עלייה לישראל: 1. יליד ישראל 2. עלייה ממדינות חבר העמים לאחר שנת 1990 3. עלייה מאתיופיה לאחר שנת 1980 4. אחר _____
5. שנות השכלה: 1. לא סיימתי בית ספר יסודי 2. יסודי 3. תיכון 4. על-תיכוני

Questionnaire validation

* culturally-sensitive

Specific populations:

- Pediatrics, Psychiatrics, Geriatrics, Obstetrics
- Specific comorbidities
- Developing countries

DHS studies in humans



הבעלות והאחריות על המידע והתכנים המופיעים במצגת שייכים לכותב בלבד ואין חברת ברא צמחים אחראית למהימנותם או לדיוקם של תכנים אילו, והם אינם מהווים ייעוץ מקצועי או התוויה רפואית

תהיה לי ברא