

Detoxification in Naturopathic Medicine: A Survey

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Abstract

Objectives: This study sought to assess the use of clinical detoxification therapies used by licensed naturopathic doctors (NDs) in the United States.

Design: This was a qualitative, descriptive, online survey of a convenience sample of NDs.

Methods: An online survey was conducted of NDs who were licensed in the United States. Responses were analyzed descriptively regarding the use of clinical detoxification therapies. Respondents were recruited from a membership list provided by the American Association of Naturopathic Physicians, and from alumni e-mail lists of Council of Naturopathic Medical Education accredited naturopathic medical schools.

Results: Surveys were sent out to 1442 e-mail addresses (261 were returned to sender); a total of 196 respondents completed the survey (16.6%). Ninety-two percent (92%) of respondents reported using clinical detoxification therapies. Over 75% of respondents utilized detoxification therapies primarily to treat patients for environmental exposures, general cleansing/preventive medicine, gastrointestinal disorders, and autoimmune disease. Regarding methods used, >75% reported using dietary measures, reducing environmental exposures, and using botanicals as detoxification therapies. Eighty-three percent (83%) of NDs surveyed reported using follow-up measurements to determine efficacy of detoxification therapies. The most common were patient symptom questionnaires (66%), patient medical histories (54%), and urinary provocative challenge testing (53%).

Conclusions: The majority of NDs responding to this survey reported routine use of clinical detoxification therapies to treat a range of medical conditions utilizing multiple therapeutic approaches. Although the majority of NDs reported using some follow-up measurements after detoxification therapy, few of these are an objective means to determine treatment efficacy. Further research is needed in the field of complementary and alternative medicine clinical detoxification to determine the safety and efficacy of these approaches.

Introduction

DURING GLOBAL INDUSTRIALIZATION over the past century, the manufacture, use, and release of xenobiotics, including synthetic chemicals and metals, into the environment has increased exponentially. As a result, exposure to persistent bioaccumulative toxicants (PBTs) by humans has increased. Exposure to certain PBTs has been associated with adverse health effects, including endocrine disruption,¹ neurological² and reproductive effects,³ as well as cancers⁴ and cardiovascular diseases.⁵ Examples of chemicals associated with diseases and disorders include organochlorine pesticides, phthalates, bisphenol A, and polybrominated diphenyl

ethers. Comprehensive indices of chemical–disease associations are available online from advocacy groups,⁶ independent research organizations/networks,⁷ and the federal government.⁸ Over 80,000 chemicals are registered for use today in the United States, with an estimated 2000 new ones coming to market annually, many of which have not been studied for adverse health effects.⁹

Human biomonitoring is the process of measuring the amount of chemicals that exist within the body (blood, urine, adipose, cord blood, breast milk, etc.) coming from various environmental sources, such as soil, air, water, dust, or food.¹⁰ The concentration of these chemicals, assessed by biomonitoring, is commonly referred to as the “body burden.” Studies

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increasingly suggest that the human body burden of several chemicals, at physiologically relevant levels, is a real threat to human health, including fetal and neonatal health.^{11–15}

The term “detoxification” has become common in today’s society, generally referring to weight loss, addiction recovery, or a panacea for numerous nonspecific ailments. Approaches to detoxification are highly variable, nonstandardized, and often controversial. The clinical definition of detoxification is less vague. The Centers for Disease Control and Prevention’s Agency for Toxic Substances & Disease Registry defines detoxification as “the process of removing a poison or toxin or the effect of either from an area or individual.”¹⁶ Clinical toxicology books define detoxification as conversion of “toxic parent compounds to nontoxic metabolites,” or “all reactions, enzyme-catalyzed or not, that consume toxic metabolites without producing injury.”^{17,18} There are virtually no standardized clinical practice guidelines or textbooks in the field of detoxification. Within complementary and alternative medicine (CAM), there may be a large variation between CAM practitioners’ use of detoxification therapies, depending on schooling, subsequent training, or individually developed protocols. It is unclear what methods are used by CAM practitioners on a regular basis for the purpose of detoxification (for diagnosis or treatment).

To the authors’ knowledge, no comprehensive assessment of clinical detoxification practice in the United States has ever been conducted. However, limited data on specific detoxification protocols are available in the literature. For example, detoxification using a medical food supplement (UltraClear[®] and UltraClear SUSTAIN[®]) in combination with a modified elimination diet was found to improve Metabolic Screening Questionnaire scores, and increase Phase I and II metabolism markers, although not all findings were statistically significant.^{19,20} A review by Crinnion summarizing a case series spanning over 10 years of practice with patients undergoing a detoxification protocol indicated that 83% of people who had undergone these treatments self-rated their results as “good” or “great.” These questionnaires were filled out by patients 0–10 years after completion of the protocols, and therefore serve as a subjective means of rating efficacy.²¹ One of the most frequently cited programs, the Hubbard Purification Program,²² is currently being used at a high-profile clinic in Manhattan to treat World Trade Center rescue workers. The multicomponent program is centered on graduating doses of niacin, as well as sauna, exercise, nutrient supplementation, and electrolytes. While methodological descriptions of the program lack specificity, particularly regarding rationale, medical monitoring, and poor characterization of endpoints, it has been shown to decrease serum and adipose levels of lipophilic chemicals, including polychlorinated biphenyls and 1,1,1-trichloro-2,2-bis(*p*-chlorophenyl)ethane.^{23–25} In addition, its strong association with L. Ron Hubbard and the Church of Scientology has drawn some criticism.

The few previous studies on detoxification, while providing promising data, have had important methodological limitations, including lack of peer-review, lack of randomization, lack of control groups, poorly characterized methodology, and small sample sizes. With the body burden increasing for a number of synthetic chemicals, and increasing research suggesting possible or probable adverse human health effects from these exposures, there exists an urgent public health and clinical need for research on methods of decreasing body burden (detoxification). Before rigorous

clinical trials can be conducted, there is need for a better description of the current detoxification treatments used by CAM clinicians. Naturopathic doctors are an excellent resource for this information because they are provided clinical training in detoxification methods, although this training may be more based on biochemical rationale and anecdote than evidence based. The purpose of this survey was to obtain information from licensed naturopathic doctors (NDs) practicing in the United States on the use of detoxification treatments and outcome measures assessed in their practices.

Methods

Research design

This was a qualitative, descriptive, electronic survey of NDs licensed in the United States. The survey, its maintenance, and responses were conducted using the online service Survey Monkey (Portland, OR). Participants were notified in the first page of the survey of the approximate time required to complete the survey, data storage measures, and confidentiality. Participants were not compensated for completing the survey. Participants gave their consent by an electronic signature and the study and consent form was approved by the Institutional Review Board of Bastyr University in Kenmore, WA.

Respondents

Subjects for this survey were NDs licensed to practice medicine in the United States. Subjects were recruited via e-mail; addresses were obtained from the American Association of Naturopathic Physicians (AANP) website. In addition, attempts were made to contact alumni representatives of the four U.S. naturopathic medicine schools accredited by the Council on Naturopathic Medical Education: Bastyr University, National College of Natural Medicine, Southwest College of Naturopathic Medicine & Health Sciences, and University of Bridgeport College of Naturopathic Medicine, in order to recruit alumni for the survey via e-mail. Of those schools, Bastyr University and the National College of Natural Medicine sent e-mails to their alumni with information about this survey. The e-mails sent to both AANP e-mail addresses and alumni contained a short paragraph regarding the existence and purpose of the study along with a link to the survey website. Information provided by the AANP suggested that there are over 2100 licensed NDs in the United States.

Statistical analysis

Information was collected in a descriptive manner in order to gain a general understanding of naturopathic medical detoxification practices. Data are presented mostly in percentage form. Data regarding numerical values, such as years in practice, are reported as means with standard deviations. Data summaries were calculated by survey software on Survey Monkey. Means and standard deviations were computed with Microsoft Excel (2002).

Results

Survey respondents

E-mails were sent to 1181 potential respondents, and 196 licensed NDs provided electronic signatures voluntarily

consenting to participate in the online survey (16.6% response rate). Participants had been in practice from 0 to 32 years, with a mean of 7.3 years. The majority of respondents were female (72.1%), practicing in Washington State (34%) or "Other" (i.e. unlicensed states for naturopathic medicine; 26%), and were either graduates of Bastyr University (54.8%) or National College of Natural Medicine (31.7%). See Table 1 for detailed information on survey respondent characteristics.

Use of detoxification therapies by naturopathic doctors

Ninety-two percent (92%) of respondents reported using detoxification therapies in their practices. On average, 28 patients per month were seen specifically for detoxification therapy. Reported use of detoxification therapies in specific age groups was as follows: 13% of respondents treated children from birth to 6 years of age, 23% treated children and adolescents 7–17 years of age, 98% treated adults 18–55 years of age, and 63% treated patients 55 years of age and older.

Respondents reported treating a wide variety of patient populations and medical conditions with detoxification

therapies, with over 75% treating environmental exposure (82%), general cleansing/preventive medicine (81%), gastrointestinal disorders (80%), and autoimmune disease (76%; Table 2).

Types of detoxification therapies utilized by naturopathic doctors

When asked about detoxification therapies utilized in their practice, respondents reported using multiple therapies, with over 75% reporting the use of dietary measures such as "cleansing foods," increased fruit/vegetable intake, vitamin/mineral supplementation, organic foods, elimination diet, probiotics, and stool bulking agents/fiber, as well as reducing environmental exposure and liver, gallbladder, or lymphotropic botanicals, such as cholegogues (herbs that promote the excretion of bile), and lymphogogues (herbs that promote lymphatic flow; Table 3).

Measurements to determine the need for and efficacy of detoxification

Respondents were asked what diagnostic techniques they employed to determine the need for detoxification therapies. Thirteen percent (13%) of respondents stated that they did not use diagnostic techniques. The three most common diagnostic techniques reported by respondents were medical history (81%), environmental exposure history (62%), and comprehensive metabolic panel (55%). (It should be noted that a routine medical history does not often include a comprehensive environmental exposure history). Respondents reported that detoxification therapy lasted a mean of 37 days, and ranged from 3 to 365 days.

TABLE 1. DEMOGRAPHICS OF RESPONDENTS

	Percent (%)
Licensure status (N=201)	
Licensed ND	97.5
Not licensed/don't know	2.5
Total	100
Gender (N=197)	
Female	72.1
Male	27.9
Total	100
Age (N=197)	
21–35 years	36
36–45 years	33.5
46–55 years	21.3
56–65 years	9.1
Currently practicing (N=98)	
Yes	98.5
No	1.5
Total	100
Average years in practice (N=196)	7.3 (SD±6.5)
Average number of patients seen per week (N=167)	21.5 (SD±19.0)
Average number of patients seen per month (N=167)	84.7 (SD±81.0)
School where ND degree was granted (N=199)	
Bastyr University	54.8
Boucher College of Naturopathic Medicine	0.0
Canadian College of Naturopathic Medicine	2.5
National College of Natural Medicine	31.7
Southwest College of Naturopathic Medicine & Health Sciences	9.5
University of Bridgeport College of Naturopathic Medicine	1.0
Other ^a	0.5
Total	100

^aOther, student at National College of Natural Medicine. ND, naturopathic doctor.

TABLE 2. NATUROPATHIC DOCTORS REPORTING TREATMENT OF PATIENT POPULATIONS/MEDICAL CONDITIONS WITH DETOXIFICATION THERAPIES

Conditions	Percent (%) N=169
Environmental exposure	82
General cleansing/preventive medicine	81
Gastrointestinal disorders	80
Autoimmune disease	76
Inflammation	72
Fibromyalgia	71
Chronic fatigue syndrome	69
Weight loss	65
Endocrine disorders	62
Multiple chemical sensitivity	59
Liver disease	58
PMS	53
Cardiovascular disease	51
Mercury amalgam removal	49
Neurodegenerative illness	46
Cancer	44
Depression	43
Infertility	41
Recovery from chemotherapy/radiation	40
Menopause	39
Prepregnancy	39
Other psychological disorders	30

PMS, premenstrual syndrome.

TABLE 3. USE OF DETOXIFICATION THERAPIES IN GENERAL THERAPY

	Percent (%) N=169
Cleansing foods (i.e., <i>Brassica</i> family, beet root, dandelion, etc).	91
Increased fruit/vegetable intake	88
Vitamin/mineral/antioxidant supplementation	85
Organic foods	85
Elimination diet	84
Probiotics	83
Reduce environmental exposure	81
Stool bulking agents/fiber	79
Cholagogue herbs	75
Sauna	66
Chelating agents	60
Skin brushing	56
Lymphagogue herbs	51
Avoidance of animal products	47
Constitutional hydrotherapy	40
Unmonitored cardiovascular exercise	39
Increased protein intake	35
Colonic irrigation/colon hydrotherapy	33
Combination homeopathic remedies	33
Fasting	31
Constitutional homeopathic remedies	27
Laxative herbs	27

Eighty-three percent (83%) of respondents stated that they used follow-up measurements to determine efficacy of detoxification therapies. Subjects who reported using follow-up measurements indicated that they did so after an average of 23 days, with a range from 0 to 360 days. The three primary follow-up measurements reported were patient symptom questionnaire, patient medical history, and urinary provocative challenge testing.

Discussion

Use of detoxification therapies by naturopathic doctors

Methods of detoxification have existed in different cultures for thousands of years, ranging from sweat lodges in Native American traditions to *Panchakarma* of Ayurvedic medicine. Today, naturopathic medical students are trained in detoxification principles through coursework in biochemistry, nutrition, gastroenterology, environmental medicine and clinical rotations (personal communication, John Hibbs, ND, Bastyr University 2010; Dr. Walter Crinnion, ND, Southwest College of Naturopathic Medicine [SCNM]). Dr. Crinnion now directs an Environmental Medicine Department at SCNM, specifically to educate health care providers and conduct research on environmental toxicants and their health effects.^{26,27} Furthermore, a small group of NDs specializing in environmental medicine and detoxification are in the process of forming the Naturopathic Association of Environmental Medicine (bylaws approved by the House of Delegates of the AANP, 2008), for promoting research, education, and standards of practice.

Research supports the role of medical nutrition in the prevention and treatment of disease, inflammation, allergies, and asthma, as well as protecting against and treating en-

vironmental exposures.^{28,29} For example, some fruits and vegetables that contain antioxidants and phytonutrients enhance detoxification. Research demonstrates that green leafy vegetables have large amounts of antioxidants and enhance phase II detoxification in the liver.^{30,31} Consuming *Brassica* vegetables enhances Phase II detoxification by inducing the glutathione/glutathione S-transferase (GST) system.³² Organosulfur components of garlic oil, diallyl disulfide, and diallyl trisulfide have also been shown to increase hepatic detoxification in rat models through enhancement of phase II metabolism via GST.³³ In addition, certain organically grown produce may have higher antioxidant and bioactive compound levels, as well as lower pesticide/herbicide/fungicide levels.^{34,35}

As the interest in complementary and alternative medicine grows in the United States and ND licensure increases,²⁷ the public may have increased exposure to detoxification therapies under the care of a licensed ND (or other health care provider) to address the potential adverse effects of an increasing body burden of synthetic chemicals.

Respondents to this survey indicated that they treat a wide variety of patient populations and medical conditions using detoxification therapies. Due to the format of this survey, it was not possible to determine why or how NDs treated these patient populations/conditions, only that they were being treated with detoxification. However, it was possible to gather data on the most common conditions for which NDs used detoxification therapies (>75%), which included environmental exposure, general cleansing/preventive medicine, gastrointestinal disorders, and autoimmune diseases.

Detoxification therapies reported in this survey varied widely, with 22 of 30 specific therapies used by over 25% of respondents. Detoxification therapies reportedly used by more than 75% of NDs included dietary measures (cleansing foods, increased fruit/vegetable intake, vitamin/mineral/antioxidant supplementation, organic foods, elimination diet, stool bulking agents/fiber), probiotics, reducing environmental exposure, and cholagogue herbs (herbs that promote the excretion of bile). The data seem to indicate that more general detoxification therapies reported are frequently used for a number of conditions, whereas more specific therapies may be utilized less frequently by NDs or only for specific conditions.

Strengths and limitations

This survey presents data for the first time on detoxification therapies used by naturopathic physicians. Due to the format of the survey, it was not possible to assess which therapies were used for conditions treated, except for those specifically asked about.

Selection bias may have occurred, since the recruitment process was via e-mail and it is possible that not all licensed NDs have e-mail accounts, or perhaps more likely that addresses were mistyped, filtered as junk mail, or were old e-mail accounts. Another source of selection bias was the use of AANP-listed e-mail addresses, since there is a cost for membership and NDs are not required to be members of this organization for licensure purposes. Furthermore, only two of the four United States naturopathic colleges sent the survey e-mails to their alumni. Thus, the results of this survey

may not be generalizable to the whole population of NDs practicing in the United States.

E-mails were sent to 1442 people (261 e-mails were returned to sender), and 196 individuals provided an electronic signature, resulting in a 16.6% response rate. Numbers for e-mails sent through alumni organizations were not available. This response rate is lower than previously published surveys of NDs regarding breast cancer treatment, which was 47%, and multiple sclerosis treatment, which was 44.2%.^{36,37} Studies comparing electronic versus mail surveys of medical residents and faculty, and Canadian physicians, support the theory that response rates of electronic surveys are lower, but result in a shorter response time, and that quality of data is either equivalent, or open e-mail responses tend to be longer than mail responses.^{38,39} Information could not be gathered on nonrespondents, so it was not possible to assess for the degree of response bias in this survey. It is possible that those who utilized detoxification therapies in their practice were more likely to respond. Still, valuable information was gathered on the detoxification therapies used by NDs in their practices, which has not previously been presented in the literature.

Conclusions

This is the first survey conducted of NDs regarding the use of detoxification therapies in clinical practice. The wide variety in responses regarding age, patient populations/conditions, and therapies may reflect the philosophy of "comprehensive, multidisciplinary, and individualized interventions," typical of the naturopathic profession.⁴⁰ It was possible to ascertain information regarding primary detoxification therapies utilized by NDs for several specific conditions. The high frequency of use of dietary interventions for detoxification is supported, in part, by the scientific literature. Important in future research would be the inclusion of controlled clinical trials of both specific detoxification therapies and comprehensive protocols, where biochemical tests in addition to clinical outcomes are used to determine the effect of treatment. To this end, further research is needed to determine the validity and reliability of laboratory measures or patient-reported outcomes to assess the efficacy of detoxification therapies.

As increasing evidence of the relationship between body burden and adverse health effects of synthetic chemicals emerges, safe and effective methods of reducing body burden levels will be a vital component of naturopathic medicine, and complementary, alternative, and integrative medicine in general. Detoxification therapies used by NDs may serve as an adequate means to reduce the body burden of synthetic chemicals found today in humans; however, scientifically rigorous research is needed to determine the safety and efficacy of these therapies. The authors' observation that only approximately 50% of surveyed NDs reported use of laboratory measures to assess toxicant exposure, or to determine the efficacy of treatment is surprising and could be a result of the survey design (the validity of certain types of toxicant testing is highly controversial, and beyond the scope of this survey). Nevertheless, it is clear that further research and practice standards are needed. This survey provides an important step into examining the general use of detoxification therapies by NDs. Further elaboration of how and

why specific detoxification interventions are used, and how effective they are is needed. Public health, CAM practitioners, and conventional medicine may benefit from more detailed surveys, formal quantitative assessments, such as practice-based research networks, and detoxification-specific clinical trial research.

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Disclosure Statement

No competing financial interests exist.

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