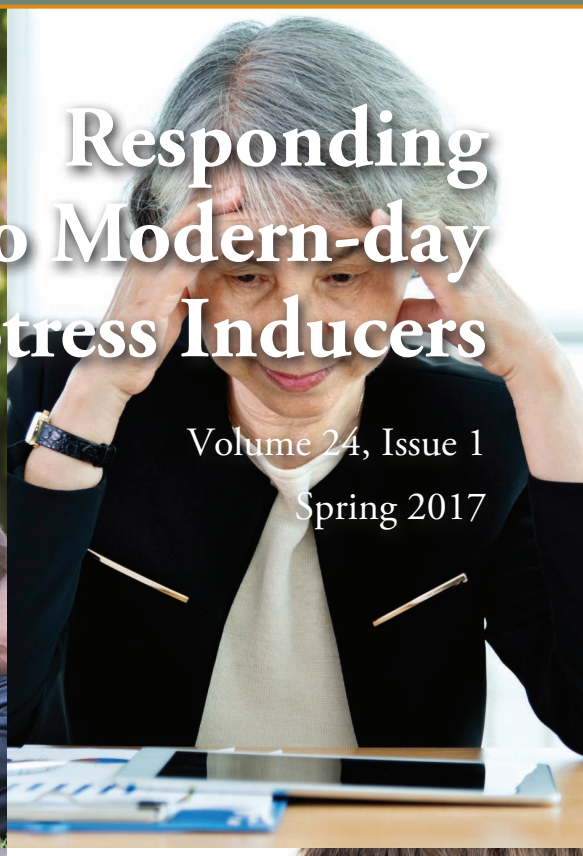
Vital Link

The journal of the Canadian Association of Naturopathic Doctors

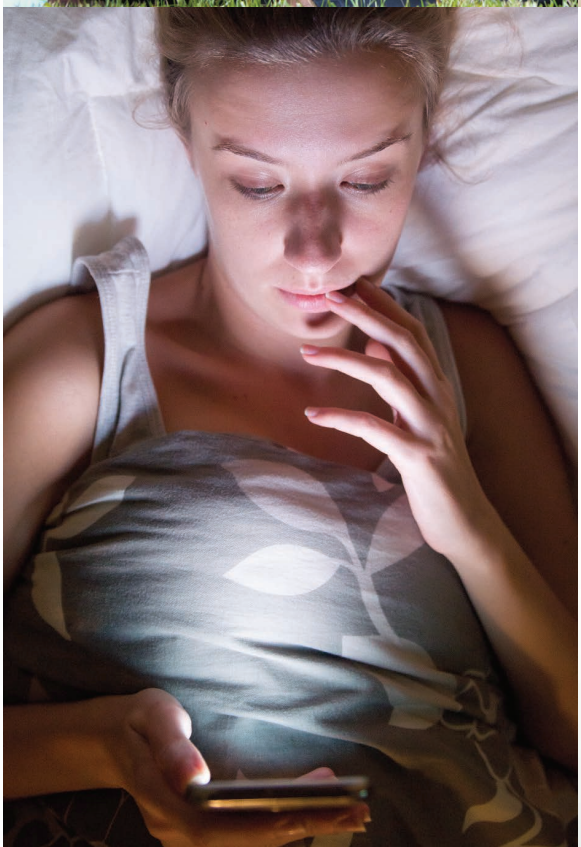
Feature Articles

- Stress Effects of Childhood Allergies/Illness on Children and Their Family Members
- Nature Connection and Health: Getting Back to Our Roots
- The Influence of Social Media on Stress and the Role that Gender Plays
- Balancing Financial, Relationship and Job-Related Stress



Responding to Modern-day Stress Inducers

Volume 24, Issue 1
Spring 2017



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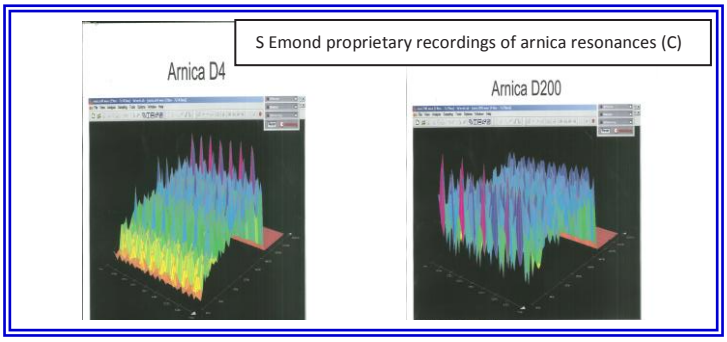

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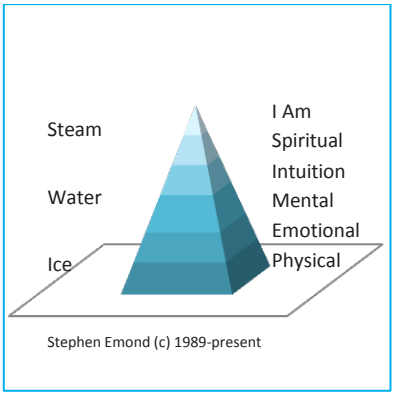

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Vital Link
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Responding to Modern-day Stress Inducers

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The *Vital Link* is the professional journal of the Canadian Association of Naturopathic Doctors (CAND). It is published primarily for CAND members and features detailed reviews of specific causal factors: philosophical and research-based papers, clinical practice articles and case reviews, as well as international updates on the profession. The *Vital Link* has an outreach to other health care professions and promotes qualified naturopathic doctors to corporations, insurance companies and the Canadian government.

Forthcoming Themes

Summer 2017 Case Reviews: Naturopathic Treatment of Acute Conditions
Fall 2017 Case Reviews: Chronic Disease

Submissions
When writing for the *Vital Link*, keep in mind its broad readership and outreach to other professions. Your contribution to the *Vital Link* will benefit the naturopathic profession as a whole and provide you with personal professional exposure. Previously unpublished material is preferred. Please contact the managing editor for submission guidelines.

Circulation
The *Vital Link* is published three times per year and is distributed to over 2300 qualified Canadian NDs and students of CNME-accredited naturopathic programs in Canada and the U.S. The *Vital Link* is also distributed to the CAND's corporate members and in our media kit. The journal is available in print and e-formats, by paid subscription.

Advertising
Professional vendors providing NHPD/Health Canada-compliant products or other services to NDs are encouraged to advertise in the *Vital Link*. The CAND's advertising partners enjoy unequalled exposure to qualified Canadian naturopathic doctors.

Naturopathic Notes

Dr. Iva Lloyd, BScH, ND

Stress as a cause of disease has been identified and discussed for years. The focus of the discussion is generally on the impact of stress on the body and how that affects cortisol and the stress pathways. In this edition of the *Vital Link* we have delved into specific situations that contribute to stress.

Naturopathic doctors Deborah Kennedy, Baljit Khamba and Sarah Hardy-Walsh begin this issue by discussing the impact of allergic disorders in children and how it contributes to stress to not only for the child but their parents and family. With atopic childhood disorders on the rise it is valuable to understand how these conditions set up childhood for other stress-related conditions and the ways in which they change the dynamics in a home. The article provides practitioners with assessment tools to assist them in tracking the impact that stress is having on the child and their family members.

Social media, is it good or bad? Naturopathic doctors Alexsia Priolo, Patrick Callas and Adella Gerry review the research exploring the link between social media and stress. They not only review common social media platforms such as Facebook, Instagram and Snapchat, the authors also consider the different impacts social media has on females and males. Social media is here to stay and knowing how to properly assess its health effects is an important aspect of a naturopathic assessment.

Dr. Sarah King, ND and Dr. Chelsea Schreiner, ND do a thorough job of exploring the stress-effects of finances, relationships and work. The contributors explore the interrelationship of financial stress on relationships, how occupational stress can affect relationships, and how financial stress impacts a person's work. The article emphasizes how our roles and commitments can change our ability to handle stress and provides recommendations for working towards a life that includes proper self-care and work-life balance.

In true naturopathic fashion, Dr. Jennifer Hillier, ND emphasizes the importance of connecting with nature as a way of preventing stress and dealing with stress. She reminds naturopathic doctors of the research supporting the link between spending time outside and being healthy – on many levels. Dr. Hillier also relays personal examples of how you can bring nature back to your naturopathic practice.

In subsequent editions of the *Vital Link* we are going to be placing a greater emphasis on case studies and providing tools to assist NDs in writing and publishing case study reports. Stay tuned for updates.

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Stress Effects of Childhood Allergies/Illness on Children and Their Family Members

Dr. Sarah Hardy Walsh, ND, **Dr. Baljit Khamba,** ND, MPH, and **Dr. Deborah Kennedy,** ND, PhD

Allergic disorders have become common in both children and adults, with asthma occurring in 12% of children and 8% of adults, food allergies in 2-4% of children and 1-2% of adults, and 20-25% of the population reporting symptoms of allergic rhinitis.[1,2,3] Chronic allergic illnesses can become a pressing burden to the patient, their caregiver and taxing to the healthcare system overall. The objectives of this article are to explore the effects of allergic illnesses on the stress experience of the atopic children and their families.

The physiological and psychological impact of chronic stress on children with atopy

Behavioural and psychological components of stress relates to any uncomfortable "emotional experience accompanied by predictable biochemical, physiological and behavioural changes."[4] Short bursts of stress can be beneficial in delivering a drive or energy to get through situations like exams or deadlines. However, the chronic stress experienced by a child with childhood allergies and/or illnesses can adversely affect their immune, cardiovascular, neuroendocrine and central nervous system in a variety of different ways.[5] Further, atopy such as food allergies, atopic dermatitis/eczema, and asthma can impair a child's overall quality of life and result in negative emotional responses.[6,7] Given the potential for negative effects to both health and quality of life in these patients, a priority would be in understanding their impact and developing strategies to improve overall pediatric health.

The stress response, whether acute or chronic results in the release of corticotropic releasing factor (CRF), adrenocorticotrophin hormone (ACTH) from the pituitary and glucocorticoids from the adrenal glands. This activation of the HPA axis results in an increase of glucocorticoids in the plasma, which persists until the triggering stimuli is resolved. In situations of chronic/toxic stress, there is a hypersecretion of glucocorticoids from the adrenal cortex and sustained activation of the central and peripheral sympathetic nervous systems. This rise in plasma cortisol concentrations in chronic stress can trigger the release of pro-inflammatory cytokines (interleukins 1 and 6, tumour necrosis factor alpha and interferon alpha), which contribute towards further glucocorticoid release.[8].

The chronic activation of the HPA axis and the resulting cortisol concentrations from a young age in children with atopy plays a role in the overall activation and chronicity of atopic conditions. One study examined healthy children (aged 8-14) and children with ongoing atopic dermatitis, but currently in remission. The subjects were age and sex matched and divided into two groups (healthy vs. atopic dermatitis). The subjects were exposed to stressful psychosocial stimuli, while having intervals of pre and post salivary cortisol, heart rate and perceived stress measured. Compared to healthy children, this study found that the children with atopic dermatitis had a blunted adrenocortical response to the stress, suggesting that atopic children have a hyporeactive or blunted stress response, which contributes to their physical symptoms and an increased potential for a mental health comorbidity.[9,10]

The influence of atopic symptoms on the physiological stress response in the body can exacerbate the inflammatory response and its chronicity and contribute towards significant emotional and behavioural problems.[11] Research by Buske-Kirschbaum et al. examined whether an attenuated responsiveness of the HPA axis to stress was a common feature amongst children with allergic symptoms. Results showed that the children with allergic asthma showed a blunted cortisol response compared to their healthy controls.[10] This blunted cortisol response may contribute negatively to a variety of conditions in the atopic child. Early-life hyper responsiveness of the HPA axis due to ongoing stressors and the resulting blunted cortisol response to stress, can have detrimental long-term effects, increasing the likelihood of behavioural and emotional disorders, such as anxiety and depression. These results have the potential to extend into adulthood. The Great Smoky Mountains Study (GSMS) longitudinally investigated the development of psychiatric disorders in rural and urban youth. The 2014 report investigated whether adolescents with food allergies were at a greater risk of psychopathology. The report findings suggest that food allergy patients had more symptoms of anxiety, attention deficit and hyperactivity disorder, and anorexia nervosa.[12] A second more recent study examined the association between asthma and food allergy and anxiety and depression in patients at 14 and 21 years of age. The findings suggest an association between food allergy and anxiety in adolescence that persisted into adulthood, while depression was associated with asthma suffers in adolescence only.[13]

In addition to the alteration of the HPA axis functioning, the physical symptoms of chronic allergies can lead to alterations in the quality of life for a child and contribute to the development of mental health comorbidity, sleep concerns, and other psychiatric and behavioural issues. Research has shown that children with allergic disorders had significantly higher odds of having at least one caregiver-reported diagnosis of a comorbid problem behaviour disorder (PBD) compared to those without any allergic disorder.[11] Both eczema and asthma were associated with ADD/ADHD, depression, anxiety, conduct disorder, and learning delay.[11]

Conditions like anxiety, phobias and depression are classified under a broad category known as 'internalizing' disorders.[14] The prevalence of depressive and anxiety disorders in children 6-19 year of age is approximately 4-8% and children with atopy demonstrated an increased vulnerability in developing such mental health conditions.[15,16] Nanda et al. demonstrated that children with allergic disease in early childhood are significantly more likely to have internalizing behaviours compared to children without allergic disease.[15] Furthermore, their findings supported two potential mechanisms behind allergic disease developing into internalizing disorders: 1) behavioural modification - related to the long-term stress associated with the symptoms and treatment of chronic disease and 2) hypersensitive HPA response to allergic stimuli, which releases cortisol and modifies serotonin action, leading to mood disturbances. Screening children with allergic disease for mood disorders is an important part of a health assessment and key to prevention and early intervention of mental illness.[15]

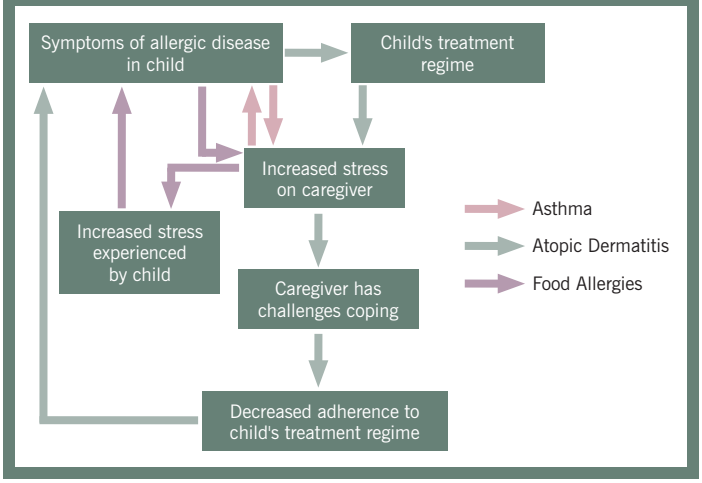
Childhood Allergic Disease and Caregiver Stress

The stress of allergic disease stretches beyond the child to the caregivers, in most cases the mother.[17,18,19] As the symptoms of allergic disease and the complexity of treatment regimens increase, parents report increased psychological distress and decreased quality of life.[18,19,20,21] And, as paternal and maternal stress levels rise, allergic disease morbidity also increases.[22,23] Figure 1 illustrates the pathways through which childhood allergic disease and the resulting caregiver stress influence the child's condition. The following sections describe the pathway related to each allergic diagnosis.

Atopic Dermatitis

For children with atopic dermatitis, Lewis-Jones report that as the caregiver's stress levels rise it becomes more challenging for the caregiver to cope. This coping difficulty results in a decreased adherence to the child's treatment regimens, leading to an aggravation of or a reduced long term relief from the child's symptoms.[19] The influence on stress levels and quality of life for caregivers are multi-factorial. Sleep disruption is reported for 60% of children with eczema.[19] Prolonged sleep latency, increased frequency of night-time waking and increased reports of co-sleeping parents and children contribute to an average 2.5 hours per night reduction of parent sleep, particularly during flare-ups of disease symptoms.[19] These changes in sleep patterns correlate with daytime behaviour

Figure 1: Caregiver Stress Associated with Allergic Disease in a Child and the Exacerbation of the Child's Allergic Symptoms



and discipline problems for the child, further increasing stress on the parent(s) and reducing their reports of self-efficacy for managing the behaviours and for managing the atopic dermatitis long term.[24-27] The time consuming nature of managing complicated skin treatment regimens adds an additional impact on the stress levels of parents. Treatment regimens may include increased time off work for medical appointments and treatments, increased household expenditures, increased time doing laundry, house cleaning, preparing meals and shopping, combined with increased limitations to the family diet, limitation of pet ownership and avoidance of certain household body care and cleaning products.[18,19,28] As a result, the majority of parents caring for a child with atopic dermatitis report significantly more stress and feelings of frustration, hopelessness, anxiety, depression, anger, guilt and an inability to cope.[18,19] Parental stresses are further compounded by insufficient medical advice and social support, conflicting advice from healthcare providers and well-meaning family and friends and lack of knowledge of treatments and their potential side effects.[18] As disease severity increases, parental psychological distress increases and ability to cope decreases, resulting in increased difficulty to care for the child and decreased quality of life for the parent(s).[18,19,28]

Asthma

For children with asthma, as parental stress increases, research has shown a direct correlation to increased asthmatic symptoms. Maternal stress (often increased due to caring for a child with allergic illness) predicts wheezing in infants.[23] In addition, children exposed to negative family emotional climate report more depressive symptoms and these emotional triggers are associated with greater asthma morbidity.[23]

Food Allergy

Parents of children with food allergy report significantly more stress, anxiety and depression, compared to parents of children without these reactions, which ultimately impact the child's social and emotional

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experience of food allergy.[29,30] Triggers for parental stress related to their child's food allergies are primarily connected to the ubiquity of the food allergen (i.e.: dairy, eggs, nuts), past experience with severe allergic reactions and others' misunderstanding and perceived disregard for the child's food allergy.[17] Walker et al. determined that as severity of a child's food allergy increases, the level of a mother's perceived stress increased, resulting in an increase in the mother's cardiovascular disease risk, via increased systolic and diastolic blood pressures.[31] This connection, between the child's food allergy and mother's stress level and cardiovascular disease risk was particularly significant for mothers of children under five years of age. In addition, many mothers report being labelled as overprotective when taking measures to prevent their child's exposure to food allergens.[17] As a result, they report increased distress and decreased quality of life.[17] When Chow et al. measured maternal overprotection (via The Vulnerable Child/Overprotecting Parent Scale), they found that as maternal overprotection increased, perception of her child's functioning decreased and the child's social and dietary limitations increased.[30] In addition, levels of maternal depression, anxiety and stress are significantly and positively associated with increasing the child's food related anxiety, social and dietary limitations and the emotional impact of food allergy.[30]

Assessment and Treatment Approaches

Assessment Tools - Child

Effective symptom exploration through history-taking and physical exam are important, however to allow for more detailed information on a child's coping strategies two assessment tools can be used: Kidcope[32] and CODI (Coping with Disease) to identify potential stressor where coping skills are lacking.[33] Kidcope is a 15 item checklist for 7-12 year olds and 10 items for 13-17 year olds. The checklist is designed as a brief screening tool which assesses children's coping skills or lack thereof around items such as distraction, self-criticism, social withdrawal, etc.[32] It is widely used in many countries; however, its brevity is both a strength and a weakness since each item/strategy is only assessed once.[34] CODI is a 29 item checklist which covers six coping strategies, such as acceptance of the illness, distance or withdrawal from the situation, and emotional reactions.[33] The CODI focuses on identifying habitual strategies which can change as the child ages. Neither checklist has been reported to be widely accepted nor used in clinical studies. While their strength as a diagnostic tool has yet to be proven, they offer clinicians an opportunity to expand their assessment of the atopic child beyond a physical assessment in order to understand whether the condition is triggering and perpetuating the stress response, contributing to further aggravation of the physical condition. The results of these assessment tools may provide a doorway to opening discussions with care-giver regarding the influence that the atopic condition is having on the child's health outside of the physical symptoms. Collaboration with a clinical psychologist will provide further assistance with identifying and treating the behavioural and coping responses of children with allergies, should the need arise.

Assessment Tools - Parent & Family

There are a number of tools available to assess the parental and family stress associated with having a child with atopy and/or food allergy. The Dermatitis Family Impact Score is a measurement tool designed to assess the impact of having a child with atopic eczema on the family and its members. It is a 10 item questionnaire that is designed to assess the impact of items such as housework, family relationships, sleep, etc.[35,36] It has broad international use, good reliability and internal consistency.[37] A second tool is the Childhood Atopic Dermatitis Impact Score (CADIS) which is a 45 item checklist grouped into 5 domains - child symptoms, child activity limitations and behavior, family and social function, parent sleep and emotions.[38] A systematic review of quality of life tools found that the CADIS tool had adequate internal consistency, reliability and hypothesis testing.[39] The Food hypersensitivity family ImPact (FLIP) questionnaire is a tool that has been developed specifically for families coping with food allergies.[40] Recently developed and validated by Mikkelsen et al., the questionnaire includes 19 questions, using a 7 point Likert scale, along with a 'not applicable' alternative. The mean score of all answers provided by a parent reflects the level of impact that food allergy has on the family – high score, high impact.[40] With initial testing, the FLIP showed good internal consistency and reproducibility.[40] The FLIP is still in the early stages of development and a review by Heinl et al. concluded there was no specific tool that was found to be sufficiently robust for use in clinical studies of allergic children and their families.[39] This, however, should not negate their utility in clinical practice. Similarly to the assessment tools for the child, noted above, those tools assessing parental and family impact provide opportunity for the clinician to explore beyond the child's physical atopic or allergic symptoms to their impact on the family. Given that an atopic child is reliant upon their caregiver(s) for care and support, stressed caregivers and inadequate support could potentially perpetuates the child's condition and impact quality of life. Clinicians must also be aware that while these tools may be helpful to quantitatively assess family stress related to a child with atopic dermatitis or other allergic illness, the tools are quantitative in nature and not designed to capture potential subtlies reflective of the complex and dynamic relationship between the family members, the child and the atopic illness.[41]

Overall, the assessment tools available may be helpful in creating awareness regarding the impact of allergic illness on the child and family and informing the direction of treatment. This stresses the importance of a complete assessment by the clinician and opens the door to collaboration with other healthcare providers in support of the patient's care.

Treatment Approaches

Most treatment approaches in atopy focus on the management of the illness as a means to reduces the stress experienced by the child and their family. Child development research is evolving and suggesting that the development of resilience can be an effective strategy to tip the balance from toxic stress to tolerable stress.[42]

STRESS ASSESSMENT TOOLS

CHILD
these tools are designed to assist with the identifying the gaps in a child's ability to cope with the health-related stress of a chronic illness.

Kidcope: assess a child's coping skills around problem-solving, distraction, social support, social withdrawal, cognitive restructuring, self-criticism, the blaming of others, emotional expression, wishful thinking, and resignation.

Coping with Disease (CODI): assess a child's coping ability along six scales: acceptance of illness, avoidance, cognitive-palliative, distance, emotional reaction, and wishful thinking.

CARE GIVER/FAMILY
These tools are help to assess the impact that a child with atopy has on the caregiver/family.

Dermatitis Family Impact Score (DFI): assesses the impact of the child's skin condition on the family in several areas; housework, family relationships, sleep loss, emotional distress and financial.

Childhood Atopic Dermatitis Impact Score (CADIS): assesses the impact along two dimensions (child and parent) and five factors; child symptoms and related activity limitations and family/social function, sleep, and emotions.

Food Hypersensitivity Family Impact (FLIP): assesses perceived impairment in families of children in the areas of nutrition, health, emotions and everyday life.

Critical in the child's development of resilience is the presence of a stable, caring supportive relationship between the child and the important adults in their lives. Qualitative assessment of parental and family stresses, within health care consultations are a key aspect of the overall assessment and treatment recommendations. With the level of impact that childhood allergic illness has on parental stress and quality of life and the resulting potential for aggravation in their child's illness (whether directly through emotionally triggering symptoms or indirectly through reduction in adherence to treatment regimens), it is vital for clinicians to address a parent's level of stress as part of an overall assessment and treatment plan.

Much of the parental stress and anxiety, related to their child's allergic condition, can be reduced by providing accurate, clear, concise education regarding their child's illness and treatment recommendations.[18,43] Knibb reported that cognitive behavioral therapy for mothers of children with food allergy reduced anxiety, depression and worry.[44] While this case series involved a small sample size, it provides a potential direction for supporting families. Parents would also benefit from interventions incorporating child behaviour management training and ways to educate others (family, friends, care providers) about allergic illness, to enhance self-efficacy and contribute to better long term child and family outcomes.[17,24]

In addition to providing parent/care-giver support and education, supporting the child's experience of stress is an important aspect of care for allergic children. There are two approaches that can be considered; the use of botanicals, homeopathics and supplementation to modulate the stress response and the use of therapeutics to minimize the behavioral symptoms. The research in the use of adaptogenic herbs in children in absent; however, both Bone and Bove suggest that ashwaganda (Withania somnifera) and Siberan ginseng (Eleutherococcus senticosus) are two botanicals that could be considered.[45,46] Supplementation with B vitamins, essential fatty acids and/or magnesium could also be considered to support both the behavioral symptoms and adrenal glands.[45] Lemon balm and valerian could be considered to address restlessness and sleep disturbances associated with the stress or anxiety. A study in children under 12 years of age experiencing restlessness and dyssomnia found that the combination of lemon balm (320 mg per day) and valerian (640 mg per day) in divided dose was effective in reducing the severity of these symptoms.[47] The lack of strong research evidence to support naturopathic treatment approaches to children's adrenal health coupled with the growing awareness of the implications on the child health of chronic stress, represents an opportunity for further research.

Conclusion

There is no doubt that treating the physical symptoms associated with atopic conditions is germane, however, so too is treating the associated stress. As identified in the opening paragraphs, stress impacts not only critical bodily systems but can contribute to both emotional and behavioral problems.[5,10,11] Therefore, the stress aspects of these atopic conditions can not be ignored. As naturopathic doctors, we are in a key position to work with the child and their caregivers to address the elements of stress and atopy from a mental, emotional, physical and environmental perspective. In addition to addressing the physical symptoms of the atopic condition, we need to consider the assessment of the stress and behavioral impacts of atopy on these families and include the necessary treatment components to addressing these aspects.

About the Authors

Sarah Hardy Walsh, ND practices in Moncton, New Brunswick, with a special focus on women's health, pediatrics and breastfeeding education and support. Inspired by the Nature Cure approach, she helps families make informed, intuitive decisions about health, through clinical consultations and community workshops. Outside her practice, you'll find Sarah exploring the woods or relaxing by the ocean with her family.

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Dr. Khamba was born and raised in Toronto, Canada, where she completed her honors Bachelor of Science degree at York University, specializing in Psychology. Following that, she worked as a research analyst at the Centre for Addiction and Mental Health (CAMH), where she researched alcohol addiction and anxiety. While there, Dr. Khamba completed her Master in Public Health where she focused her research on nutrition and mental health. After that, she completed the intensive four year ND program at the Canadian College of Naturopathic Medicine (CCNM). Dr. Khamba has experience working in integrative psychiatric clinics, as well as more generalized practice, as well as being involved with research projects at the University of Alberta on natural health product safety.

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References

1. Asthma, 2014. Statistics Canada. http://www.statcan.gc.ca/pub/82-625-x/2015001/article/14179-eng.htm. Accessed December 15, 2016.
2. Allergy Statistics. American Academy of Allergy Asthma & Immunology. www.aaaai.org/media/resources/media_kit/allergy_statistics.stm. Accessed December 15, 2016.
3. Food Allergies and Intolerances. Health Canada. http://www.hc-sc.gc.ca/fn-an/securit/allerg/index-eng.php. Accessed December 15, 2016.
4. Baum, A. Stress, Intrusive Imagery, and Chronic Distress. *Health Psychol.* 1990;9:653-75.
5. Understanding Chronic Stress. American Psychological Association. http://www.apa.org/helpcenter/understanding-chronic-stress.aspx. Accessed December 15, 2016.
6. Baena-Cagnani CE. The global burden of asthma and allergic diseases: the challenge for the new century. *Curr Allergy Asthma Rep.* 2001;1:297-8.
7. Wambolt MZ, Laudenslager M, Wambolt FS, Kelsay K, Hewitt J. Adolescents with atopic disorders have an atenuated cortisol response to laboratory stress. *J of Clin Immunol.* 2003; 111: 509-514.
8. Leonard, E (2005). The HPA and immune axes in stress: the involvement of the serotonergic system. *Eur Psychiatry.* 2005;20:S302-6.
9. Buske-Kirschbaum A, Jobst S, Wustmans A, Kjrschbaum C, Rauh W, Hellhammer D. Attenuated Free Cortisol Response to Psychosocial Stress in Children with Atopic Dermatitis. *Psychosom Med.* 1997; 59:419-426.
10. Buske-Kirschbaum A, von Auer K, Krieger S, Weis S, Rauh W, Hellhammer D. Blunted cortisol responses to psychosocial stress in asthmatic children: a general feature of atopic disease? *Psychosom Med.* 2003;65:806-10.
11. Garg N, Silverberg JI. Association between childhood allergic disease, psychological comorbidity, and injury requiring medical attention. *Ann Allergy Asthma Immunol.* 2014; 211: e525-e532
12. Shanahan L, Zucker N, Copeland WE, Costello EJ, Angold A. Are children and adolescents with food allergies at increased risk for psychopathology? *J Psychosom Res.* 2014;77(6):468-73.
13. Ferro MA, Van Lieshout RJ, Scott JG, Alati R, Mamun AA, Dingle K. Condition-specific associations of symptoms of depression and anxiety in adolescents and young adults with asthma and food allergy. *J Asthma.* 2016;53(3):282-8.
14. Tandon M, Cardeli E, Luby J. Internalizing in early childhood: a review of depressive and anxiety disorders. *Child Adolesc Psychiatr Clin N Am.* 2009;18(3):593-610.disorders
15. Nanda MK, LeMasters GK, Levin L, et al. Allergic Diseases and Internalizing Behaviors in Early Childhood. *Pediatrics.* 2016; 137. doi: 10.1542/peds.2015-1922.
16. Goodwin RD, Robinson M, Sly PD, Holt PG. Childhood atopy and mental health: a prospective, longitudinal investigation. *Psychol Med.* 2017;47(2):317-325
17. Walkner M, Warren C, Gupta RS. Quality of Life in Food Allergy Patients and Their Families. *Pediatr Clin North Am.* 2015; 62:1453-61.
18. Pustišek N, Vurnek Živković M, Šitum M. Quality of Life in Families with Children with Atopic Dermatitis. *Pediatr Dermatol.* 2016;33:28-32.
19. Lewis-Jones S. Quality of life and childhood atopic dermatitis: the misery of living with childhood eczema. *Int J Clin Pract.* 2006; 60: 984–992.
20. King RM, Knibb RC, Hourihane JO'B. Impact of peanut allergy on quality of life, stress and anxiety in the family. *Allergy.* 2009; 64: 461–468.
21. Faught J, Bierl C, Barton B, Kemp A. Stress in mothers of young children with eczema. *Arch Dis Child.* 2007; 92: 683-686.
22. Lange NE, Bunyavanich S, Silberg JL, Canino G, Rosner BE, Celedon JC. Parental: psychosocial stress and asthma morbidity in Puerto Rican twins. *J Allergy Clin Immunol.* 2011; 127: 734-40.
23. Feldman JM, Ortega AN, Koinis-Mitchell D, Kuo AA, Canino G. Child and Family Psychiatric and Psychological Factors Associated With Child Physical Health Problems: Results from the Boricua Youth Study. *J Nerv Ment Dis.* 2010; 198: 272–279.
24. Mitchell AE, Fraser JA, Morawska A, Ramsbotham J, Yates P. Parenting and childhood atopic dermatitis: A cross-sectional study of relationships between parenting behaviour, skin care management, and disease severity in young children. *Int J Nurs Stud.* 2016; 64: 72-85.
25. Mitchell AE, Fraser JA, Ramsbotham J, Morawska A, Yates P. Childhood atopic dermatitis: a cross-sectional study of relationships between child and parent factors, atopic dermatitis management, and disease severity. *Int J Nurs Stud.* 2015; 52: 216-28.
26. Reid P, Lewis-Jones MS. Sleep disturbance in preschoolers with atopic eczema. *Clin Exp Dermatol.* 1995; 20: 38-41.
27. Dahl RE, Bernhisel-Broadbent J, Scanlon-Holdford S, Sampson HA, Lupo M. Sleep disturbances in children with atopic dermatitis. *Arch Pediatr Adolesc Med.* 1995; 149: 856-60.
28. Al Shobaili HA. The impact of childhood atopic dermatitis on the patients' family. *Pediatr Dermatol.* 2010; 27: 618-23.
29. Birdi G, Cooke R, Knibb R. Quality of Life, Stress, and Mental Health in Parents of Children with Parentally Diagnosed Food Allergy Compared to Medically Diagnosed and Healthy Controls. *J Allergy* (Cairo). 2016;2016:1497375.
30. Chow C, Pincus DB, Comer JS. Pediatric Food Allergies and Psychosocial Functioning: Examining the Potential Moderating Roles of Maternal Distress and Overprotection. *J Pediatr Psychol.* 2015 Nov-Dec;40(10):1065-74.
31. Walker SO, Mao G, Caruso D, Hong X, Pongracic JA, Wang X. Cardiovascular Risk Factors in Parents of Food-Allergic Children. *Medicine* (Baltimore). 2016 Apr;95(15):e3156.
32. Spirito A, Stark L, Williams C. (1988). Development of a brief coping checklist for use with pediatric populations. *J Pediatr Psychol.* 1988; 13:555-74.
33. Petersen, C, Schmidt, S, Bullinger M, et al. (2004). Brief report: Development and pilot testing of a coping questionnaire for children and adolescents with chronic health conditions. *J Pediatr Psychol.* 2004;29:635-40.
34. Blout RL, Simons LE, Devine KA et al. Evidence-based Assessment of Coping and Stress in Pediatric Psychology. *J Pediatr Psychol.* 2008; 33: 1021–1045.
35. Lawson V, Lewis-Jones MS, Finlay AY, Reid P, Owens RG. The family impact of childhood atopic dermatitis: the Dermatitis Family Impact Questionnaire. *Br J Dermatol.* 1998; 138: 109-113.
36. The Dermatitis Family Impact Score. Cardiff University, Department of Dermatology. http://sites.cardiff.ac.uk/dermatology/quality-of-life/dermatitis-family-impact-questionnaire-dfi/ Accessed November 28, 2016.
37. Dodington SR, Basra MK, Finlay AY, Salek MS. The Dermatitis Family Impact questionnaire: a review of its measurement properties and clinical application. *Br J Dermatol.* 2013; 169: 31-46.
38. Chamlin SL, Lei J, Cella D, et al. Childhood Atopic Dermatitis Impact Scale: Reliability, Discriminative and Concurrent Validity and Responsiveness. *Arch Dermatol.* 2007; 143: 768-772.
39. Heinl D, Prinsen CA, Sach T et al.. Measurement properties of quality-of-life measurement instruments for infants, children and adolescents with eczema: a systematic review. *Br J Dermatol.* 2016. doi: 10.1111/bjd.14966.
40. Mikkelsen A, Borres MP, Bjorkelund C, Lissner L, Oxelmark L. The Food hypersensitivity famiLy ImPact (FLIP) questionnaire - development and first results. *Pediatr Allergy Immunol.* 2013: 24: 574–581.
41. Sampson NR, Parker EA, Cheezum RR, et al."I wouldn't look at it as stress": Conceptualizations of Caregiver Stress among Low-Income Families of Children with Asthma. *J Health Care Poor Underserved.* 2013; 24: 275–288.
42. Supportive Relationships and Active Skill-Building Strengthen the Foundations of Resilience: Working Paper No. 13. Center on the Developing Child at Harvard University. www.developingchild.harvard.edu. Accessed December 20, 2016.
43. Vargas PA, Sicherer SH, Christie L, Keaveny M, Noone S, Watkins D, Carlisle SK, Jones SM. Developing a food allergy curriculum for parents. *Pediatr Allergy Immunol.* 2011 Sep;22(6):575-82.
44. Knibb RC. Effectiveness of Cognitive Behaviour Therapy for Mothers of Children with Food Allergy: A Case Series. *Healthcare* (Basel). 2015 Nov 25;3(4):1194-211.
45. Santich R, Bone K. *Phytotherapy Essentials: Healthy Children.* Queensland, Australia: Phytotherapy Press, 2008.
46. Bove M, *An Encyclopedia of Natural Healing for Children and Infants.* 2nd Ed., Chicago, Il. Keating Publishing, 2001.
47. Muller SF, Klement S. A combination of valerian and lemon balm is effective in the treatment of restlessness and dyssomnia in children. *Phytomed.* 2006;13:383-387.

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Nature Connection and Health: Getting Back to Our Roots

Dr. Jennifer Hillier, ND

As naturopathic doctors (NDs) we see it every day. In our own lives and those of our patients, stress levels are mounting, pulling us in many directions. Whereas a new adaptogen, nutrient pathway or therapy is developed or identified regularly, the levels of stress and illness continue to drive patients into our offices, and our arsenal of treatments often does not hold all the solutions.

Health is becoming more fleeting, industry-driven and expensive. Though the rise of movements such as Systems Medicine have begun to examine the interaction of the environment with biology and physiology,[1] the bulk of research focuses on the search for increasingly defined treatment targets, much to the detriment of our patients.

What we are missing is nature connection. Defined as the extent to which individuals include nature as a part of their identity,[2] nature connection is linked to many positive clinical outcomes including psychological wellbeing.[3] Many tests exist to ascertain the level at which an individual experiences nature connection, including The Nature Relatedness Measure,[4] and the Connectedness to Nature Scale,[5] both of which can yield baseline levels of a patient's nature connection and identify those who might most benefit from increased contact with nature.

By overlooking connection to the environment, to each other and to ourselves, naturopathic doctors have lost sight of our roots in nature, with many NDs disconnected from the natural world just outside their office doors. Rather than a passive experience of nature, a push to reestablish our connection with nature may be the very public health movement that will bring more of our patients back to health and create sustainable vitality. Reincorporating the natural world back into our protocols can increase the success of current therapeutics and add another dimension of healing currently lacking.

Literally the *Vis* represents the inherent ability of the body to heal itself and is at the core of the naturopathic principles. Naturopathic medicine strives to balance the body and make use of its own mechanisms to restore and enhance wellness. Alternate definitions of the *Vis* introduce the conscious interaction of humans with the organic and inorganic aspects of their environment.[6]

Furthermore, modern interpretations of this core principle stress the inclusion of the non-built external environment as a requisite component of health; one that is rapidly being replaced by screen time and technological pursuits.[7] In upholding these principles, we must look to including interaction with nature in our practices and in our treatment protocols.

Environmental Connection

Throughout the literature there are myriad examples of the effects of the environment upon human health.[8] Though traditional systems developed through Ayurvedic and Traditional Chinese Medicine upheld the importance of the interactions between the external and internal environs, the majority of research of the past fifty years sought to isolate individual components for in depth study. As much as researchers focus on pathways and the minutiae of biochemistry, it remains that relatively few low-cost interventions offer as broad an impact on mental, physical and spiritual parameters as time in nature.[9]

From the fields of cardiovascular and exercise physiology[10] to the challenges of mental health,[11] studies repeatedly demonstrate that exposure to the outdoors yields positive health outcomes.

Whereas many groups have been looked at with regard to nature connection, some of the most compelling studies have been done in paediatric populations. With increased screen time upwards of seven and a half hours per day for many Canadian children,[12] outdoor activities are being scheduled out of existence, and unstructured play is being replaced with programming and learning outcomes. What once was common practice, that children would play outside daily, is now a public health crisis demanding advertising campaigns and targeted strategies. In Canada, programs like ParticipAction suggest a minimum of 60 minutes of vigourous play or physical activity per day and provide a host of resources to help get kids outside in all weather.[13]

Some of the foundational research demonstrating the importance of nature time includes one Spanish study that looked at the cognitive development in children and how exposure to outdoor air positively impacted test scores.[14] Allowing children to simply be outside, with no structured activity or specific expected outcome, may be enough to change the way their brains developed and influence their

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cognitive health. In paediatric medicine, as in the educational system, we all strive to support healthy development. From sophisticated computer programs to accelerated academics, we are increasingly pulling children away from a natural source of brain stimulation with disturbing trends. By studying children not in a classroom or lab, but in outdoor environments, we may begin to get an idea of how broad-reaching the impacts of getting outside might really be, beyond the simply physical benefits of body movement. In one study published in 2009, researchers worked with children identified as having Attention Deficit Disorder, an increasing occurrence in family practice.[15] By having these children go for a walk in a local park, they found attention parameters were improved, as were the children's ability to focus on a set task.

Repeated time and again, in slightly differing formats, nature connection is arising as a powerful treatment for Attention Deficit Disorder. Arguably this disorder, along with many other paediatric mental issues, may be reclassified under Nature Deficit Disorder, a phrase coined by author Richard Louv in his book *Last Child in the Woods*.[16] This book is a must-read for the layman and ND alike to demystify the relationship between behavioural issues and nature disconnection, while providing practical ideas for reintroducing children back into the outdoors. Further clinical work outlines the importance of outdoor play in the development of executive function in the brain,[17] with enhanced mental capabilities for lateral thinking, problem solving and multi-tasking found in nature-exposed children.

In a 2016 study, it was found that play in a green space has a correlation to enhanced physical skills development, but only in children with thoughtful and self-directed outdoor playtime.[18] This in turn improved the physical activity of these children as they grew into adults, enhancing physical fitness and skills long after they left the playground. This is a critical point: enhanced long term health requires daily play time in nature. It is estimated that today's kids play on average 30 minutes per day outside, a fraction of the time that kids 20 years ago spent outdoors.[19] Generations of parents have innately recognized the value of sending kids out to play, but the benefits of this activity are not limited to those in their formative years. Extending well beyond childhood, nature connection has a significant role to play in adults and seniors as well. As a general finding, a lack of contact with outdoor environments leads to exhaustion and under activation of the parasympathetic nervous system.[20]

In one fascinating study, participants engaged in 4 days of hiking in natural settings, without access to technology.[21] At the end of the 4 days, individuals experienced a 50% increase in their ability to problem-solve and think creatively. Whereas, this may be a rather rigorous intervention, it does hold promise for the practice of vacationing in nature and decreasing contact with technology to enhance work performance.

With respect to exercise and cardiovascular research, it has been found that activities performed outdoors involve less perceived exertion,[22] as well as increased revitalization,[23] compared to their indoor counterparts. In these studies, exercise performed in nature yields better results as compared to the same activity performed indoors, promoting the inclusion of greening of exercise as a therapeutic tool for our underactive patients.

In terms of mental health, data exists that shows that being connected to nature and feeling happier have a positive relationship, with those spending time in nature reporting a greater level of satisfaction and joy.[24] In fact, the presence of community green space benefits physical parameters independent of socioeconomic status, urbanization, age or gender.[25] The mechanisms behind these improvements may be related to the improvement of social contacts that are fostered when green space is present near homes and workplaces, leading to a deeper connection to not only the environment, but also to each other.[26] Another possible mechanism involves the visual[27] and auditory[28] link between exposure to nature and the increase of parasympathetic activity. This increase then exhibits a positive effect on the immune system, including reduced inflammatory cytokine production,[29] which can lead to several positive outcomes attributed to time in natural settings.[30]

Presented here is an intervention that globally improves physical and mental health, creates immediate benefits and can be applied to every single patient in our practices with minimal expense. With evidence this compelling, we need mobilize the profession to take advantage of this data, we need to start connecting our patients to nature.

Community Connection

Supporting our connection with nature also can help to increase connection within communities, allowing for improved interpersonal support and personal health. By just increasing the presence of green spaces nearby work and home environs, it was found that neighbourhood engagement was enhanced, leading to a broad spectrum decrease in illness and crime often attributed to social isolation.[31] This support of health and the reduction of financial drains on the public system is an intriguing target for government, but research is bogged down by trying to quantify doses of nature that yield specific results, slowing development of concrete initiatives.[32]

From the benefits of indoor plants and animals to outdoor urban greenspaces, nature does not have to be untamed wilderness to exert a positive effect on health, it simply must be included. A need exists in health care to guide people in incorporating the natural world into their daily lives. Enter naturopathic doctors. As the public face of natural medicine, we know the problems, we know the benefits and we practice evidence-based medicine. Combine this with our patient base, and we could just have an unparalleled opportunity to support the health of generations to come.

In the search for improved outcomes, it is tempting to default to additional academic programming, getting in front of students to enhance nature connection while keeping them in the classroom. Fortunately for our over-programmed students it is not so simple.

Illuminating research has been done that highlights that classroom learning without physical components of activity and nature connection do nothing to build long term health benefits.[33]

They found that something as short as a 2-3-day workshop can actually permanently deepen nature connection. What is needed, in place of traditional lecturing however, is an experiential, creative art or adventure aspect to develop connection.[34] Whereas the education system can have a tremendous impact on childhood learning, the real opportunity for nature connection lies in extracurricular activities, in the home and out in the community. This needs to be a grassroots initiative. It starts with naturopathic doctors as a profession getting involved with this issue and implementing simple steps to help patients on self-directed journeys into the great outdoors. Waiting for school boards or governments to change outdoor education policy can be slow, but the individual's ability to take advantage of the benefits of nature is as easy as stepping outside.

Individual Connection

Embedding people back into nature does not only involve outdoor time, but also a reverence for and interaction with plants, animals and minerals.[35] Connection in nature is about stories, about personal relationships and observations at a deeper level. It is a form of meditation, of awareness and stress relief that can yield immediate benefits.[36] In my practice, creating opportunities for patients to incorporate nature time into their treatment plans has become increasingly popular and beneficial. From holding visits outdoors in a garden, playground or natural setting, to bringing more plants and nature scenes indoors, small changes can be made to daily practice that draw the attention to the natural world while also providing medical care.

Nature connection may not come naturally to people at first. In discussing this issue with a variety of health care professionals, it has come to my attention that often being in nature involves a component of discomfort: cold in the winter, heat in the summer, wind or rain in the spring and fall. As we spend so much of our time and resources increasing personal comfort, incorporating unease back into our lives can seem undesirable. Supporting people in acknowledging discomfort when it occurs and observing the benefits that arise from being in nature as well can help to overcome this hurdle. For example, many of my patients may spend just seconds per day outside for the winter months. Organizing events or identifying opportunities for combining a pleasurable activity like playing or interpersonal connection with the outdoors can overcome the initial aversion to going outside. In my practice, we have regular family nature club sessions where families come together to do something fun outside: unstructured, social and play-based activities that bring people together to experience nature. Afterwards we debrief by chatting about what we learned or experienced and the fun we had. Kids and parents alike identify a deeper nature awareness and relationship with each other. Targeting groups that may have a harder time scheduling outdoor time is a particular focus which can produce encouraging results. Resources like the Children & Nature Network[37] have many practical guidelines and ideas for parents, teachers and doctors who seek to support kids in getting outside.

Many of us also have a challenge in finding time to combine busy practices with outdoor time. One of the very first formal lessons I received on nature connection was from Dr. Anthony Godfrey, ND. He took us on a Herb walk and introduced us to a variety of plants that grew in the area, speaking of the plants as if they were old friends, to be listened to and respected. But my nature disconnection at that time prevented me from seeing the wisdom of his words. One thing he said that stuck with me however was this — watch the populations of plants that grow in the same area each year. Every year the same species will return, but some years one plant will do much better than another…pay attention to that successful plant as it will help to predict the trends in illness. This plant then acts as a key medicine in treating the problems that will present that winter.

It has been about 15 years since that walk, and every year I have learned more about native species and have had the opportunity to observe their populations, seeing the trends noted by Dr. Godfrey play out year after year. Now I teach patients to identify specific plants that may be growing in their local green space and to keep an eye on them. People delight in recognizing "personality" in these plants, in experiencing their life cycles and growing patterns. They seek out experiences with these plants and further knowledge about them. They begin to see the natural world has subtle nuances, and the more they pay attention the more they learn and connect. The development of a relationship with nature yields greater environmental awareness and positive behaviours to protect the environment. It is a self-fulfilling prophecy: expose a person to nature, and they will develop greater empathy and care for their environment and will subsequently work to improve their environment.[38]

Nature Connection in Practice

For those looking to introduce nature connection to their patients and practice, the resources that exist are widely accessible and exciting. In the UK, a dynamic public health initiative and study was launched on a national scale.[39] The program studied dozens of factors which promote or are involved in enhancing nature connection. From this information they created a program called "30 Days Wild"[40] through which they challenged the public to perform one of the identified tasks in nature each day for one month. Closer to home, The David Suzuki Foundation also launched a 30x30 Nature Challenge, in which people were tasked with spending 30 minutes in nature for 30 days in a row.[41] These programs have easy-to-follow suggestions and support for participants, keeping up motivation and creativity. It would be simple to run a program like this for patients, similar to other common seasonal practice focuses like detoxification, heart health or immune boosting. Even just doing a challenge like this personally can give insight into how nature connection can benefit daily life and subsequently your work with patients.

Learning a new task or targeted skill related to nature can also be a valuable segue into nature connection. One fascinating trend is

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References: 1. Biol Pharm Bull. 2011;34(5):660-5; **2.** Cancer Chemother Pharmacol. 2012 Jan;69(1):65-70; **3.** J Nutr Sci Vitaminol (Tokyo). 2015;61(1):37-44.

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TABLE 1: KEY FACTS

Nature connection fosters:

- Enhanced cognitive development[11,14,18]
- Improved stress tolerance[15,23,24]
- Reduced morbidity and mortality[10,25,31,43]
- Enhanced social connection[9,24,26]
- Improved environmental stewardship[4]

towards learning Bird Language.[42] This ancient skill has been critical in recognizing danger in our environment and subtle changes in the landscape. Listening to and deciphering the language of birds can increase present moment awareness, bring people into nature and create a more fulsome relationship with the outdoors. Tutorials can be found online and can give people a reason to spend more time learning with others in both urban and rural settings, really anywhere birds are present.

Creating opportunities for enjoyable interactions in nature for our patients is probably the easiest and most sustainable way to enhance nature connection. Suggest a local activity, research conservation area offerings or bring attention to community initiatives that get people out and about. Connect with a variety of other professionals to offer programs that appeal to many patient populations. From photography in nature and its efficacy for treating anxiety to adult outdoor play groups to children's nature art classes, the opportunities for connecting patients with nature and with each other are limited only by your imagination.

In addressing the challenges in health care, we need to be creative. As naturopathic doctors we need to take the lead and get ahead of this spreading disconnection, we need to positively impact mental and physical health and we need to reclaim our eclectic nature wisdom. And we need to do it now.

We must look to cross-disciplinary relationships, just as we hope to create connection for our patients, we must also create contacts between professions. Working with public health agencies, schools, other health care practitioners and individuals are important targets for improving societal health on the whole. The journey towards nature connection may seem difficult, but there truly is no more powerful way to benefit our patients and to truly live our principles as naturopathic doctors.

About the Author

Dr. Jennifer Hillier, ND is a naturopathic doctor and the founder of Spring Chicken Family Health, a clinic nestled on a permaculture farm just outside of Guelph, Ontario. There she farms with her family, leads workshops and retreats, runs a family practice and makes it her priority to bring hope and healing to people looking to create a better world. For more information on programs and activities please see SpringChickenFamilyHealth.com.

References

1. Bousquet J, Jorgensen C, Dauzat M, et al. Systems medicine approaches for the definition of complex phenotypes in chronic diseases and ageing. From concept to implementation and policies. *Curr Pharm Des.* 2014;20(38):5928-44.
2. Schultz PW. Inclusion with nature: The psychology of human-nature relations. In P. W. Schmuck & W. P. Schultz (Eds.), *Psychology of sustainable development.* Norwell, MA: Kluwer Academic, 2002:62-78.
3. Howell AJ, Dopko RL, et al. Nature connectedness: Associations with well-being and mindfulness. *Personality and Individual Differences.* 2011;51:166-171. doi:10.1016/j.paid. 2011.03.037
4. Nisbet EK, Zelenski JA, Murphy SA. The nature relatedness scale: Linking individuals' connection with nature to environmental concern and behaviour. *Environment and Behaviour.* 2009; 41: 715-740.
5. Mayer FS, Frantz CM. The nature connectedness scale: A measure of individuals' feeling in community with nature. *Journal of Environmental Psychology.* 2004;24:503-515.
6. Thomson JA: The popular lecture: vis medicatrix naturae. *BMJ.* 1914, 2:277-279.
7. Logan AC, Selhub EM. Vis medicatrix naturae: Does nature "minister to the mind"? *Biopsychosocial Medicine.* 2012;6:11.
8. Capaldi CA, Dopko RL, Zelenski JM. The relationship between nature connectedness and happiness: a meta-analysis. *Front. Psychol.* 08 September 2014. https://doi.org/10.3389/fpsyg. 2014.00976
9. Maller C, Townsend M, Pryor A, et al. Healthy nature healthy people: 'contact with nature' as an upstream health promotion intervention for populations. *Health Promot Int* 2006; 21 (1): 45-54. doi: 10.1093/heapro/dai032
10. Li Q, Kobayashi M, Kumeda S, et al. Effects of Forest Bathing on Cardiovascular and Metabolc Parameters in Middle-Aged Males. *Evid Based Complement Alternat Med.* 2016;2016:2587381. doi: 10.1155/2016/2587381. Epub 2016 Jul 14.
11. Bratman GN, Hamilton JP, Daily GC. The impacts of nature experience on human cognitive function and mental health. *Ann. N.Y. Acad. Sci.* 2012;1249:118–136.
12. Active Healthy Kids Canada (2013). Are We Driving Our Kids to Unhealthy Habits? The 2013 Active Healthy Kids Canada Report Card on Physical Activity for Children and Youth. Toronto: Active Healthy Kids Canada.Web site. http://dvqdas9jty7g6.cloudfront.net/reportcard2013/Active-Healthy-Kids-2013-Report-Card_en.pdf. Accessed March 10, 2017.
13. Participaction Make Room For Play Program Web site. https://www.participaction.com/en-ca/programs/make-room-for-play. Accessed March 10, 2016.
14. Dadvand P, Nieuwenhuijsen MJ, Esnaola M, et al. Outdoor spaces and cognitive development in primary schoolchildren. *Proc Natl Acad Sci USA.*; 2015 Jun 30; 112(26):7937-42.
15. Taylor AF, Kuo FE. Green exposure: Children with attention deficits concentrate better after walk in the park. *J Atten Disord.* 2009 Mar; 12(5):402-9.
16. Louv R. *Last Child In The Woods: Saving Our Children From Nature-Deficit Disorder.* 2nd Ed. New York, NY: Workman Publishing; 2008.
17. Burdette HL, Whitaker RC. Resurrecting Free Play in Young Children: Looking Beyond Fitness and Fatness to Attention, Affiliation, and Affect. *Arch Pediatr Adolesc Med.* 2005;159(1):46-50. doi:10.1001/archpedi.159.1.46
18. Pesce C, Masci I, Marchetti R, et al. Deliberate Play and Preparation Jointly Benefit Motor and Cognitive Development: Mediated and Moderated Effects. *Psychol.* 2016 Mar 11;7:349. doi: 10.3389/fpsyg. 2016.00349. eCollection 2016.
19. Juster F, Thomas et al. "Changing Times of American Youth: 1981-2003", Institute for Social Research, University of Michigan. Child Development Supplement . 2004.
20. Stilgoe JR. Gone barefoot lately? *American Journal of Preventative Medicine.* 2001; (20):243–244.
21. Atchley R.A, Strayer DL, Atchley P. Creativity in the Wild: Improving Creative Reasoning through Immersion in Natural Settings. *PLOS One.* 2012. ONE 7(12): e51474. http://dx.doi.org/10.1371/journal.pone.0051474.
22. Ceci R, Hassmen P. Self-monitored exercise at three different RPE intensities in treadmill vs field running. *Med Sci Sports Exerc.* 1991, 23 (6): 732-738.
23. Thompson CJ, Boddy K, Stein K, et al. Does participating in physical activity in outdoor natural environments have a greater effect on physical and mental wellbeing than physial activity indoors? A systematic review. *Environ Sci Technol.* 2011, 45 (5): 1761-1772.
24. Colin A, Capaldi CA, Dopko RL, Zelenski JM. The relationship between nature connectedness and happiness: a meta-analysis *Psychol.* 2014; 5: 976. Published online 2014 Sep 8. doi: 10.3389/fpsyg. 2014.00976
25. Triguero-Mas M, Dadyand P, Cirach M, et al. Natural outdoor environments and mental and physical health: relationships and mechanisms. *Environ Int.* 2015 Apr; 77():35-41.
26. Maas J, Van Dillen SM, Verheij RA, Groenewegen PP. Social contacts as a possible mechanism behind the relation between green space and health. *Health Place.* 2009;15(2):586–595. doi: 10.1016/j.healthplace. 2008.09.006.
27. Brown DK, Barton JL, Gladwell VF. Viewing nature scenes positively affects recovery of autonomic function following acute-mental stress. *Environ. Sci. Technol.* 2013;47: 5562–5569. doi: 10.1021/es305019p
28. Alvarsson JJ, Wiens S, Nilsson ME. Stress recovery during exposure to nature sound and environmental noise. *Int. J. Environ. Res. Public Health.* 2010;7:1036–1046. doi: 10.3390/ijerph7031036
29. Kenney MJ, Ganta CK. Autonomic nervous system and immune system interactions. *Compr. Physiol.* 2014;4: 1177–1200. doi: 10.1002/cphy.c130051
30. Kuo, M. How might contact with nature promote human health? Promising mechanisms and a possible central pathway. *Front. Psychol.*, 25 August 2015. | https://doi.org/10.3389/fpsyg. 2015.01093
31. Kondo MC, South EC, Branas CC. Nature-Based Strategies for Improving Urban Health and Safety. *Urban Health.* 2015 Oct; 92(5): 800–814.Published online 2015 Aug 15. doi: 10.1007/s11524-015-9983-y
32. Jennings V, Yun J, Larson L. Finding Common Ground: Environmental Ethics, Social Justice, and a Sustainable Path for Nature-Based Health Promotion. *Basel.* 2016 Sep; 4(3): 61.Published online 2016 Aug 25. doi: 10.3390/healthcare4030061
33. Ernst J, Theimer S. Evaluating the effects of environmental education programming on connectedness to nature. *Educ Res.* 2011. October 1;17(5):577–598.
34. Bruni CM, Winter PL, Schultz PW, Omoto A, Tabanico JJ. Getting to know nature: evaluating the effects of the Get to Know Program on children's connectedness with nature. *Environ Edu Res.* 2015. August 13;1–20.
35. Richardson M, Hallam J, Lumber R. One thousand good things in nature: The aspects of nature that lead to increased nature connectedness. *Environ Values.* 2015;24(5);603–619.
36. Ulrich RS, Dimberg U, Driver BL. Psychophysiological indicators of leisure benefits. In Driver, B. L., Brown, L. R. and Peterson, G. L. (eds) *Benefits of Leisure.* 1991. Venture Publishing, State College, Pennsylvania, pp. 73–89.
37. Children & Nature Network. http://www.childrenandnature.org. Accessed Dec 13, 2016.
38. Chen-Hsuan C, Monroe MC. Connection to Nature : Children's Affective Attitude Toward Nature. *Environment and Behavior.* 2012. 44: 31 originally published online 7 November doi: 10.1177/0013916510385082
39. Richardson M, Cormack A, McRobert L, Underhill R. 30 Days Wild: Development and Evaluation of a Large-Scale Nature Engagement Campaign to Improve Well-Being. *PLos One.* 2016; 11(2): e0149777.Published online 2016 Feb 18. doi: 10.1371/journal.pone.0149777
40. The Wildlife Trusts. http://www.mywildlife.org.uk/30dayswild/. Accessed Dec 12, 2016.
41. David Suzuki Foundation 30x30 Nature Challenge. http://30x30.davidsuzuki.org. Accessed December 10, 2016.
42. Bird Language. http://birdlanguage.com. Accessed December 12, 2016.
43. Michimi A, Wimberly MC. Natural environments, obesity, and physical activity in nonmetropolitan areas of the United States. *J Rural Health.* 2012 Fall; 28(4):398-407.

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The Influence of Social Media on Stress and the Role that Gender Plays

Dr. Alexsia Priolo, ND, **Dr. Adella Gerry,** ND and **Dr. Patrick Callas,** ND

Being connected via social media is important for many of our patients, ourselves included. This article discusses the top social networks used by 18-34 year olds and their effects on mental health. Moreover, we will discuss how the impact of social media varies by gender.

Canadians are among the most digitally connected populations in the world with nearly 87% of households connected to the internet.[1] Seventy-five percent of Canadians own smartphones, and their internet use has shifted to about 49% of their time spent on both their phone and computer.[2] There was a 24% increase from 2010 to 2012[3] in household internet access using handheld wireless devices. Aside from checking email on all devices (smartphones, desktops, laptops, and tablets), going on social media is the most common activity performed on handheld devices, smartphones and tablets, while it is the second most common activity on desktop and laptops (banking is the first).[1]

Facebook is the most popular social network among Canadians. 71% of surveyed Canadians use this platform at least twice per week. Usage of Facebook along with Instagram and Snapchat continues to grow, while Twitter and Google+ are slowing down.[4] Social network use is growing faster among female users and is continuing with respect to all platforms at a faster rate than that seen in Canadian men.

As social media usage increases, so do the number of published studies examining the psychological impact of using or engaging with social media. Although social media allows individuals to create a unique identity and maintain social connections, it also has the ability to be a potential source of stress or reinforce negative self-evaluations.[5]

Because Canadians frequently access social media networks,[4] it is important to assess how these networks influence human behaviour and mental health. Within the 18-34 year old demographic, the top three social media networks used are: Facebook, Instagram and Snapchat.

Facebook

Facebook is the most widely used social media platform with over one billion users worldwide. Users share over 300,000 status updates per minute including text, photo, and video to depict their everyday experiences.[6] Facebook uses a newsfeed to share data including status updates, photos, videos and links. Feeds are consistently updated based on user's connections and Facebook activity. A study conducted in October 2013 using 513 college students demonstrated that Facebook interaction time was associated with greater levels of psychological distress. This study assessed both self-esteem and communication overload to determine a possible link between distress and Facebook interaction. Communication overload occurs when users feel 'overloaded' by a large amount of complex communication, whose message may break down as more users access it and social contexts may create misunderstanding of the intended message. Results from this study indicated that students overwhelmed by communication overload by the newsfeed, experienced reduced self-esteem and were at higher risk for depression, stress and physical and emotional fatigue.[6]

In the same vein as Google becoming a verb ("Go Google that!"), Facebook has become associated with a less desirable new term coined by researchers: "Facebook depression". This so-called "Facebook depression" is the observed phenomena in which adolescents who spend a great amount of time on social media sites, develop the symptoms of depression.[7] Therefore "Facebook depression" may be more accurately termed social-media-associated depression, although admittedly this term is less catchy.

When Facebook users become friends with someone or 'like' a Facebook page, they automatically have the ability to follow them and see any updates that are posted. Users can also follow people who are not one of their Facebook friends to keep abreast of their status updates. A February 2012 study conducted using 425 college students investigated the link between Facebook use and the student's perception of other people's lives. Many Facebook users are motivated to present positive online-profiles and share socially desirable content. Presenting a good and happy life may give other users a positive impression, and long-term Facebook users (approximately 2.55 years) believed that others were leading happier lives than themselves. This includes being friends with people the users don't know personally (i.e. a celebrity). Interestingly enough, when the participants had offline interactions with their friends, they indicated they were less persuaded that others were happier than them.[8]

A 2016 study that surveyed 401 college students demonstrated that Facebook users with a large number of Facebook friends (the average user has a network of 217 friends[8]) had greater social support,

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which reduced stress, physical illness and increased psychological wellbeing.[9] Similarly, a 2016 study comparing 790 Facebook users and 155 non-users demonstrated that Facebook users have higher levels of happiness.[10] Likes and positive comments that they received through Facebook act as positive feedback, thus providing a sense of belonging that reinforces social support and overall life satisfaction. Nevertheless, a 2015 study that surveyed 633 college students, suggested that while social support was beneficial, it did not reduce depressive symptoms and improve quality of life.[11]

Overall, it is clear that many people use Facebook to keep in touch with friends and share positive content within their online profiles. Most of these studies were done in college students, and did not investigate the effects of stress in an older population that is becoming increasingly more connected on this platform. The prefrontal cortex is fully developed around the age of 25. Thus, in many college students (typically 18-23 years old) the prefrontal cortex is not fully developed. The prefrontal cortex is involved in emotional well-being, and a lack of maturity may be attributed to why students perceive the lives of others being better than their own.

Instagram

Instagram is a social networking site with almost 1.3 billion users worldwide that allows users to post and share photos and videos. There are five motivations for why people use Instagram: social interaction, archiving, self-expression, escapism and peeking.[12] Self-expression by users is generally depicted as positive portrayals of their life, with the addition of a complementary filter over their photos.

While Facebook allows one to reciprocally add friends, Instagram gives the option of non-reciprocal following of other users, otherwise known as peeking. A 2015 study with Instagram users ages 18-29, reported that users who predominately followed strangers were more at risk for depressive symptoms, compared to users who predominantly follow friends.[13] The study called this attribution theory, as Instagram users may experience feelings of loneliness, envy and resentment after browsing photos of strangers believing that they live better lives than them. The same study demonstrated that if an Instagram user predominately followed family or friends, their feelings about their perceived life would be balanced by knowing how their friends actually lived, preventing a negative social comparison.

Both Instagram and Facebook are platforms where users can present positive online profiles, and where users can like or follow strangers (such as celebrities or influencers). The data is consistent that when Instagram or Facebook users are friends with each other in real life, they are less apt to develop any depressive symptoms, unlike if a user were following a stranger.

Snapchat

Snapchat is a multimedia-sharing app that allows users to send private photos or videos (called snaps) amongst themselves, or share them publicly. These communications can be edited to add filters, text captions or emojis. Photos sent privately to friends have an expiration time ranging between 1 to 10 seconds, preventing them from being accessed again. Users who simply post photos as part of their profile are called stories, and these are accessible for a 24-hour period. Instagram has also implemented the stories feature to share particular photos for a 24-hour time period. While Instagram users do not have the same filter capabilities as Snapchat users, it may only be a matter of time until they do.

A study conducted in 2015 and published in 2016[14] reported that while Snapchat does not have supportive communities like Facebook, its users experience an increased emotional reward and positive mood using this platform. This was believed to be due to the ability to have a direct interaction with a friend by sharing private photos for a limited time period, allowing them to remain in the present and mimic a face-to-face interaction. There is also less of a need to portray a positive and curated life as seen with Instagram. Instead, users often share with close friends mundane and unedited photos of themselves and activities of their daily life.

Gender Differences in Social Media Experiences

Exposure to media and time spent on the internet effects every person, and whether it leads to negative consequences can depend on the type of exposure as well as whether you are male or female. Newspapers and magazines are being read less frequently by both sexes as the internet has become a substitute for reading paper articles.[15] There has been a large increase in internet use over the last two decades. In 2004, Leung wrote about his concerns with the amount of time that youth spend online, suggesting that they would become addicted to the internet, which seems to have become the case with the prevalence of people on their electronic devices and trends of increasing internet use.[1-3]

Males are more likely to use computers for programming and technical aspects versus females who use it for communication via social media and e-mails; however, there is little difference in time spent surfing the Internet.[15-18] Research suggests that females are more affected by media than men. A study by Kalodner indicates that females have increased negative body-images, general self-consciousness, and anxiety when being exposed to pictures of thin female models, than males exposed to images of muscular male models. Females were more likely to feel upset, ill at ease, nervous, and tense with same sex model exposure. Males being affected to a lesser degree than females by media images that a person would consider 'ideal' depends on the type of media and social cues one is exposed to, as it can manipulate what is considered an ideal body image.[14,19] In the short-term media exposure can be more detrimental to females than males, but it is not clear how body image ideals are created and how long these consequences may last.

To help explain gender differences in the media, the following behaviours have been observed: women tend to watch more television drama than men of a similar ethnicity, and women have a higher emotional response when watching the same drama

shows.[20,21] On the other hand, men spend more time watching media coverage of adventure and exploration, televised news programs, and documentaries as well as competitive sports.[15,22,23] Ratnasingam and Ellis showed Japanese women spend more time listening to music and watching music videos than Japanese men,[15] while Lyle and Hoffman[24] suggest women listening to more music is a global phenomenon. This is further explained by Tony and Weaver who show that when listening to music, the form of music dictates the sex differences in who listens more, with females listening to more soothing music, and males listening to more "hard rock".[25] These sex differences in music and TV drama can be explained by neurohormonal evolutionary changes between males and females, and can be generalized to include how media affects each sex differently as well.[15,16] It is also proposed that cultural factors of how we expect the sexes to act and sexist child-rearing practices play a role in why females watch more portrayals of romance than men.[26,27] However, this explanation may not account for differences across cultures, but other studies have shown that women are more interested in people, and men are more interested in things; which may account for some of the published data in sex differences in watching TV dramas, music preferences, and effects of media exposure on health.[28]

A Physiological Hypothesis Why Females Experience More Stress with Media Exposure

With all of the differences described above between males and females, media exposure may play a role in why females are more likely to suffer from stress-related psychiatric disorders, post-traumatic stress disorder, and unipolar depression.[29] Being pre-disposed to stress plays a major part in development of many chronic disorders, including those of a psychiatric nature, which we are seeing with increases in internet use. Corticotropin-releasing hormone (CRH) acts as a neurohormone, which activates the hypothalamic-pituitary-adrenal axis and in the brain as a neuromodulator.[29] CRH targets the locus coeruleus (LC)-norepinephrine system, which works to activate the stress cascade. Excess secretion of CRF leads to dysregulation of the HPA axis and LC-norepinephrine system, and increased prevalence of stress related disorders, which have thought to be more active in females then males.[29] Hyperarousal occurs with emotional stimuli more frequently in women in addition to the CRF_1 receptor that makes the LC-norepinephrine system more reactive.[29] This hyperarousal is more likely with increases in media and internet exposure and may be a reason females are more prone to experience negative consequences of social media, including psychiatric disorders.

For a more detailed reasoning of sex differences, when a stressor occurs, CRF is released from the paraventricular nucleus of the hypothalamus where is it transported to the pituitary via the hypophyseal portal system.[29] The pituitary then releases adrenocorticotropic hormone (ACTH) from corticotropes into the bloodstream and leads to glucocorticoid release from the adrenal glands.[29] Glucocorticoid has a negative feedback effect on the pituitary and hypothalamus to stop the stress response. Limbic system has CRF-producing neurons in the amygdala that are involved in mediating anxiety and emotional responses by modulating monoamine systems in mood and cognition.[30-35] In the short-term, activation of the central monoaminergic system and release of CHF can be adaptive, while long-term can lead to adverse consequences of psychopathology.[29] Increased CRF concentrations in CSF have been reported in both depression and PTSD, and effective treatments decrease these levels.[36-39] In rats, females have higher levels of HPA axis hormones than male rats.[40,41] In the daily circadian rhythm of cortisol release, female rats have higher peaks and greater overall levels than male rats do. Female rodents also release more ACTH and corticosterone than male rodents, in addition to staying elevated for longer periods of time.[40,42-45] Human trials have reported mixed results and are uncertain at this time, which is attributed to different types and duration of stress exposure, disease status, and demographics of subjects.[46-48] Even with these discrepancies there is enough evidence to suggest that females have higher activation of the HPA axis by CRF than males, making them predisposed to being affected negatively by images of self-perceived ideal same sex bodies, media exposure, internet stressors, and TV dramas more than males.

Providing stress-related coping mechanisms for females is particularly important to combat negative consequences of media and internet exposure, which can be as simple as diaphragmatic breathing, or more complex with a combination of counselling, adaptogens and nutrient support. The art of medicine leaves you as the practitioner to decipher and decide what is best done for your patients. With the differences in males and females it may be more important to spend more funding to research and support females when it comes to social media, as well as internet related stress inducers, because not only are women using social media and the drama-related media more often, they are predisposed to being affected by these stressors more than men.

Conclusion

Overall, there have been conflicting reports with respect to the social media platform used and its effect on mental health. There is a trend that suggests daily social media usage is associated with greater risk of stress and anxiety.[5] The number of Canadian females using social media platforms is increasing faster than in men and females appear to be more prone to social media stressors.[29,46-48] Additionally, while not explicitly investigated herein, it appears children and adolescents may be the most vulnerable to the negative effects of social media use. Because our medicine focuses on the root cause of disease, it's necessary for us to understand that in our modern world being connected to a social network although fulfilling, can contribute to common mental health concerns such as anxiety and depression. Therefore, asking about social media usage (e.g., networks used, duration of time) will help create a better understanding of our patients' motivations. Moreover, we must educate our patients – especially the younger ones – on the benefits of putting down their device and participating in activities and hobbies beyond a screen, as this may go a long way in helping them cultivate healthier habits and mindset. Nevertheless we should start by determining how much time is spent on their device – rest assured, there's an app for that (i.e., Moments, RealizD and QualityTime)!

About the Authors

Dr. Alexsia Priolo, ND is a graduate of the Canadian College of Naturopathic Medicine and pratices in Toronto, Ontario. She maintains a general family practice with a special interest in children's and women's health – healthy babies begin with mom! Prior to becoming a naturopathic doctor, Alexsia completed her Bachelor of Science degree at York University. One of Alexsia's passions is learning how our modern-day influences (such as technology and the environment) can impact our habits and affect our health. For more information visit alexsiapriolo.com.

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References

1. The Canadian Internet. Canadian Internet Registration Authority. https://cira.ca/factbook/2015/the-canadian-internet.html. Accessed December 21, 2016.
2. 49% of time online now spent on mobile devices, comScore says. CBC. http://www.cbc.ca/news/business/49-of-time-online-now-spent-on-mobile-devices-comscore-says-1.2794903. Accessed December 21, 2016.
3. Canadian Internet Use Survey, 2012. Statistics Canada. http://www.statcan.gc.ca/daily-quotidien/131126/dq131126d-eng.htm. Accessed December 19, 2016.
4. McKinnon M. 2016. Canadian social media use and online brand interaction data. CanadiansInternet.com. http://canadiansinternet.com/2016-canadian-social-media-use-online-brand-interaction-statistics/. Accessed December 21, 2016.
5. Vannucci A, Flannery K, Ohanessian C. Social media use and anxiety in emerging adults. *Journal of Affective Disorders.* 2016;207(2017):163–166.
6. Liu, P., Tov, W., Kosinski, M., Stillwell, D., & Qiu, L. (2015). Do Facebook Status Updates Reflect Subjective Well-Being? *Cyberpsychology, Behavior, And Social Networking.* 18(7), 373-379. http://dx.doi.org/10.1089/cyber.2015.0022
7. Chen W, Lee K-H. Sharing, liking, commenting, and distressed? The pathway between Facebook interaction and psychological distress. *Cyberpsychology, Behavior, and Social Networking.* 2013;16(10):728–734. doi:10.1089/cyber.2012.0272.
8. O'Keeffe, G. S., Clarke-Pearson, K., & Council on Communications and Media (2011). The Impact of Social Media on Children, Adolescents, and Families. *Pediatrics* 2011;127;800.
9. Chou H-TG, Edge N. "They are happier and having better lives than I Am": The impact of using Facebook on perceptions of others' lives. *Cyberpsychology, Behavior, and Social Networking.* 2012;15(2):117–121.
10. Brailovskaia, J. & Margraf, J. (2016). Comparing Facebook Users and Facebook Non-Users: Relationship between Personality Traits and Mental Health Variables – An Exploratory Study. *PLOS ONE.* 11(12), e0166999.
11. Nabi RL, Prestin A, So J. Facebook friends with (health) benefits? Exploring social network site use and perceptions of social support, stress, and well-being. *Cyberpsychology, Behavior, and Social Networking.* 2013;16(10):721–727. Accessed December 21, 2016.
12. McCloskey W, Iwanicki S, Lauterbach D, Giammittorio D, Maxwell K. Are Facebook "friends" helpful? Development of a Facebook-Based measure of social support and examination of relationships among depression, quality of life, and social support. *Cyberpsychology, behavior and social networking.* 2015;18(9):499–505. Accessed December 21, 2016.
13. Lee E, Lee J, Moon J, Sung Y. Pictures speak louder than words: Motivations for using Instagram. *Cyberpsychology, behavior and social networking.* 2015;18(9):552–6. Accessed December 21, 2016.
14. Lup K, Trub L, Rosenthal L. Instagram #instasad? Exploring associations among instagram use, depressive symptoms, negative social comparison, and strangers followed. *Cyberpsychology, behavior and social networking.* 2015;18(5):247–52. Accessed December 21, 2016.
15. Greenberg, B. S., & Woods, M. G. (1999). The soaps: Their sex, gratifications, and outcomes. *Journal of Sex Research.* 36: 250–257
16. Toney, G. T., & Weaver, J. B. (1994). Effects of gender and gender role self-perceptions on affective reactions to rock music videos. *Sex Roles.* 30: 567–583.
17. Robinson, J. P. (1971). The audience for national TV news programs. *Public Opinion Quarterly.* 35: 403–405.
18. Jackson, L., Kelly, E., Gardner, P., & Schmitt, N. (2001). Gender and the internet: Women communicating and men searching. *Sex Roles.* 44: 363–379.
19. Kalodner, C. R. (1997). Media influences on male and female non-eating-disordered college students: A significant issue. *Eating Disorders.* 5(1), 47-57. Doi:10.1080/10640269708249203
20. Myers, P. N., & Biocca, F. A. (1992). The Elastic Body Image: The effect of television advertising and programming on body image distortions in young women. *Journal of Communications.* 42(3): 108-133.
21. Gibson, H. M., & Francis, L. J. (1993). The relationship between television viewing preferences and interest in science among 11–15-year-olds. *Research in Science & Technological Education.* 11: 185–190.
22. Ellis, L. (2011). Evolutionary neuroandrogenic theory and universal gender differences in cognition and behavior. *Sex Roles.* 64: 707–722.
23. Gantz, W. (1981). An exploration of viewing motives and behaviors associated with television sports. *Journal of Broadcasting.* 25: 263–275.
24. Ratnasingam, M. & Ellis, L. (2011). Sex Differences in mass media preferences across four Asian countries. *Journal of Media Psychology: Theories, Methods, and Applications.* 23(4), 186-191. Doi:10.1027/1864-1105/a000054.
25. Lyle, J., & Hoffman, H. R. (1972). Explorations of patterns of television viewing by preschool-age children. In E.Rubenstein (Ed.), *Television and social behavior: Television in day-to-day life pattern of use.* (pp. 257–273). Washington, DC: US Government Printing Office.
26. Ellis, L., Hershberger, S., Field, E., Wersinger, S., Pellis, S., Geary, D., & Hetsroni, A. (2008). *Sex differences: Summarizing more than a century of scientific research.* New York, NY: Psychology Press.
27. Eagly, A., Wood, W., & Diekman, A. (2000). Social role theory of sex differences and similarities: A current appraisal. In T.Eckes & H. M.Trautner (Eds.), *The developmental social psychology of gender.* (123–174). New York, NY: Taylor & Francis.
28. Jones, M. G., Howe, A., & Rua, M. J. (2000). Gender differences in students' experiences, interests, and attitudes toward science and scientists. *Science Education.* 84: 180–192.
29. Gefen, D., & Straub, D. W. (1997). Gender differences in the perception and use of e-mail: An extension to the technology acceptance model. *MIS Quarterly.* 20: 389–400.
30. Bangasser, D.A., & Valentino, R.J. (2012). Sex differences in molecular and cellular substrates of stress. *Cellular and Molecular Neurobiology.* 32(5): 709-723.
31. Lodge, D.J. & Grace, A.A. (2005). Acute and chronic crticotropin-releasing factor 1 receptor blockade inhibits cocaine-induced dopamine release: Correlation with dopamine neuron activity. *Journal of Pharmacology and Experimental Therapeutics.* 314(1): 201-206. Doi: 10.1124/jpet.105.084913.
32. Rodaros, D., Caruana, D.A., Amir, S. & Stewart, J. (2007). Corticotropin-releasing factor projections from limbic forebrain and paraventricular nucleus of the hypothalamus to the region of the ventral tegmental area. *Neuroscience.* 150(1): 8-13. Doi: 10.1016/j.neuroscience.2007.09.043.
33. Walker, D.L., Toufexis D.J., & Davis, M. (2003). Role of the bed nucleus of the stria terminalis versus the amygdala in fear, stress, and anxiety. *European Journal of Pharmacology.* 463(1–3): 199–216.
34. Wanat, M.J., Hopf, F.W., Stuber, G.D., Phillips, P.E., & Bonci, A. (2008). Corticotropin-releasing factor increases mouse ventral tegmental area dopamine neuron firing through a protein kinase C-dependent enhancement of Ih. *Journal of Physiology.* 586(8): 2157–2170. Doi:10.1113/jphysiol.2007.150078.
35. Valentino, R.J. & Commons, K.G. (2005). Peptides that fine-tune the serotonin system. *Neuropeptides.* 39(1): 1–8.
36. Valentino, R.J. & Van Bockstaele, E. (2008). Convergent regulation of locus coeruleus activity as an adaptive response to stress. *European Journal of Pharmacology.* 583(2–3): 194–203.
37. Baker, D.G., West, S.A., Nicholson, W.E., Ekhator, N.N., Kasckow, J.W., Hill, K.K., Bruce, A.B., Orth, D.N., & Geracioti, T.D. Jr (1999). Serial CSF corticotropin-releasing hormone levels and adrenocortical activity in combat veterans with posttraumatic stress disorder. *American Journal Psychiatry.* 156(4): 585–588.
38. Banki, C.M., Karmacsi, L., Bissette, G., Nemeroff, C.B. (1992). Cerebrospinal fluid neuropeptides in mood disorder and dementia. *Journal of Affective Disorders.* 25(1): 39–45.
39. Bremner, J.D., Licinio, J., Darnell, A., Krystal, J.H., Owens, M.J., Southwick, S.M., Nemeroff, C.B., & Charney, D.S. (1997). Elevated CSF corticotropin-releasing factor concentrations in posttraumatic stress disorder. *American Journal of Psychiatry.* 154(5): 624–629
40. Sautter, F.J., Bissette, G., Wiley, J., Manguno-Mire, G., Schoenbachler, B., Myers, L., Johnson, J.E., Cerbone, A., & Malaspina, D. (2003). Corticotropin-releasing factor in posttraumatic stress disorder (PTSD) with secondary psychotic symptoms, nonpsychotic PTSD, and healthy control subjects. *Biological Psychiatry.* 54(12): 1382–1388.
41. Viau, V., Bingham, B., Davis, J., Lee, P., & Wong, M. (2005). Gender and puberty interact on the stress-induced activation of parvocellular neurosecretory neurons and corticotropin-releasing hormone messenger ribonucleic acid expression in the rat. *Endocrinology.* 146(1): 137–146. Doi:10.1210/en.2004-0846en.2004-0846.
42. Weinstock, M., Razin, M., Schorer-Apelbaum, D., Men, D., & McCarty, R. (1998). Gender differences in sympathoadrenal activity in rats at rest and in response to footshock stress. *International Journal of Developmental Neuroscience.* 16(3–4): 289–295.
43. Handa, R.J., Burgess, L.H., Kerr, J.E., O'Keefe. J.A. (1994). Gonadal steroid hormone receptors and sex differences in the hypothalamo–pituitary–adrenal axis. *Hormonal Behaviors.* 28(4): 464–476. Doi:10.1006/hbeh.1994.1044.
44. Iwasaki-Sekino, A., Mano-Otagiri, A., Ohata, H., Yamauchi, N., & Shibasaki, T. (2009). Gender differences in corticotropin and corticosterone secretion and corticotropin-releasing factor mRNA expression in the paraventricular nucleus of the hypothalamus and the central nucleus of the amygdala in response to footshock stress or psychological stress in rats. *Psychoneuroendocrinology.* 34(2): 226–237. doi:10.1016/j.psyneuen.2008.09.003
45. Rivier, C. (1999). Gender, sex steroids, corticotropin-releasing factor, nitric oxide, and the HPA response to stress. *Pharmacological Biochemistry Behaviours.* 64(4): 739–751
46. Seale, J.V., Wood, S.A., Atkinson, H.C., Harbuz, M.S., Lightman, S.L. (2004). Gonadal steroid replacement reverses gonadectomy-induced changes in the corticosterone pulse profile and stress-induced hypothalamic–pituitary–adrenal axis activity of male and female rats. Journal of *Neuroendocrinol.* 16(12):989–998.
47. Kudielka, B.M., & Kirschbaum, C. (2005). Sex differences in HPA axis responses to stress: A review. *Biological Psychology.* 69(1): 113–132. Doi:10.1016/j.biopsycho.2004.11.009.
48. Seeman, T.E., Singer, B., Wilkinson, C.W., & McEwen, .B (2001). Gender differences in age-related changes in HPA axis reactivity. *Psychoneuroendocrinology.* 26(3): 225–240.

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Balancing Financial, Relationship and Job-Related Stress

Dr. Sarah King, ND and **Dr. Chelsea Schreiner,** ND

Each of us has roles and commitments in our life and an inherent need to survive. We need to earn money to cover the cost of living and additionally, we want to make time outside work for our relationships and recreation. Self-care takes time. Taking care of others takes time. The intricacies of these associations, between obtaining and maintaining employment, managing personal finances, fostering relationships and taking care of a family and ourselves, are like a scale that constantly needs balancing, despite life's unpredictable nature.

Finances, relationships, and work; each of these factors alone have the potential to contribute to stress, but when multiple "stressful" factors interact the impacts are even greater and it can reduce our ability to handle and adapt. It can result in a role overload, or such a substantial stress load that over time our ability to recover and cope is reduced, having a detrimental effect on our health and quality of life.

Stress, to some extent, plays an essential role in our lives. Humans have the ability to handle bouts of stressful activity, and under the right conditions, recover. Recovery phase is a key component in our ability to adapt. Adaptation to stress improves our health and well-being and can consist of personal coping methods or activities, as well as coping mechanisms that help promote growth and health within relationships.

Our roles and stress

Balance of life roles encompasses more than just the average Canadian trying to meet the demands of life; it incorporates who we are as individuals and our current circumstances.[1] Balance is often achieved when we properly prioritize the responsibilities of each of our roles in life while enabling our own self-care.[2] Common challenges include changes in scheduling, ensuring our income meets or exceeds expenses, nourishing a healthy marriage and/or partnership and raising children. All the while, we need to take care of ourselves: eat properly, get enough sleep, exercise, be social and have a creative outlet.

Financial situations can change easily and quickly and may be completely out of our control. Our ability to adapt to unexpected or abrupt change serves a crucial role in our degree of resilience.

The imbalance or overload of roles occurs when available time and energy cannot keep up with demands. An inability to adapt to sustained or increased stressors can have detrimental effects on our health.[3] Giving up or using more energy than there is to spare can lead to burnout.[3] Other health outcomes of prolonged stress and role overload include fatigue, anxiety and decreased satisfaction with work and family life that then lead to worsening physical and mental health.[3] Many people turn to aids to get them through rough periods, whether it be stimulants like caffeine, pharmaceuticals, or recreational drugs with stimulation/sedation effects. These crutches are ways of getting through the day, but in reality, our own well-being continues to deteriorate over time, as our health and self-care are over extended.

Disruptions in the balance

When our roles are not balanced, we tend to be more dissatisfied with life, which could lead to depression and the potential to develop adrenal fatigue leading to adrenal exhaustion. Chronic stress without proper recovery can also lead to serious long-term health concerns including chronic pain, headaches, anxiety, chronic fatigue, fibromyalgia, irritable bowels, and irritable bowel syndrome.[2]

A study in China found that a poor work-recreation balance lead to an impaired health response. Subjects who were diagnosed with, or experienced, hyperlipidemia, hypertension, obesity, and osteoporosis had engaged in fewer leisure and sports activities.[2]

Problems maintaining a proper life role balance can lead to a downward spiral, whereby the harder or longer we work the more tired we feel when we come home. Exhaustion from one responsibility often takes the energy we have to devote to other priorities, such as self-care. For example, when we're exhausted, it can be harder to maintain motivation to exercise or go for a walk. Neglecting these self-care practices and crashing after work can become a coping strategy to compensate for an overactive work role, taking away from relationships as well as personal well-being. By neglecting this form of self-care (exercise), both mental and physical health may be negatively impacted.

Those who had the most difficulty employing a healthy life-role balance were typically between the ages of 25-45 years in China.[2]

This could potentially be due to an increase in age-related roles and responsibilities. Those at the younger end of the spectrum are at the beginning of their careers, trying to find affordable living and perhaps in the process of starting a family. For those at the other end of this age spectrum, stressors may include additional responsibilities at work, or being a care-taker for elder family members. It is important to consider these additional tasks and roles that may be increasing demands of time and energy.

Each life role involving finances, occupation, and relationships imparts its own stresses. In combination, as shown in the diagram, stresses are compounded as each role overlaps one another, in terms of time and resources. As more roles are added, increasing demands follow. Ultimately, the centre of the diagram seen in Figure 1 represents the highest potential for stress overload from increased role demands. In the following sections, we will further explore the intimate connection between each of these factors, address the unique relationship between them, and finally, suggest coping strategies for a healthier life role balance.

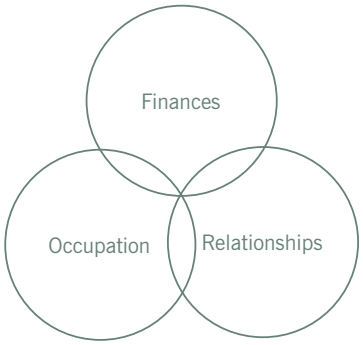
Financial and Relationship Stress

The impact of finances on relationships is a well-studied pattern. In a 2011 study, Falconier and Epstein found that in a climate of financial insecurity, those who have higher standards regarding personal finance as it relates to success, experienced more stress.[4] Not surprisingly, stress is heightened in couples with financial standards regarding savings and inappropriate spending differing between partners. Additionally, if couples identify poor spending habits as the foremost negative trait in their partner, the strain on the relationship may be greater.[4] Further, selective perception, where one tends to focus on their partner's negative spending habits, and dismisses their positive financial decisions, will yield a distorted view of their partner and can increase the stress associated with that relationship.[4]

Another potential strain on relationships involves a parent's reaction to financial strain. Wadsworth et al. found that financial stress predicted depression.[5] In turn, financial stress impacted the parent-child relationship by contributing to psychological problems among all family members[5]. Without the ability to cope, adolescents responded to their parents' reactions of financial stress through increased problem behaviour.[5]

A more recent study looked at the subjective experience of stress in varying income levels and effects on the parent-child relationship.[6] For example, low-income earner stress may constitute an inability to pay for rent or childcare costs, while high-income earner stress may involve debt, over consumption, or difficulty with mortgage payments. Although the asset issues are different, the subjective experience would be similar.

FIGURE 1: INTERACTIONS OF LIFE ROLE STRESS
Potential for stress overload from role demands increases with higher role overlap.



Previous research focused on indirect effects of financial issues on the parent's mood, as the main contributor to dysfunction in the parent-child relationship. However, Ponnet's 2014 study showed that direct effects may also play a role.[6] This was particularly true in low-income families, where adolescents, aged 7-11 years, become more acutely aware of their parent's inability to fulfill basic physical needs. Additionally, these children were also impacted indirectly through awareness of parents' perception of the financial situation. Adolescents in mid-and high-income families tended to be affected only indirectly by their awareness of parental behaviours or mood in response to financial stress.

Not surprisingly, it was shown that more financial stress equated to greater depressive symptoms in parents and inter-parental conflict.[6] Furthermore, the stress of the parent depended on the stress experienced by their partner. The family unit as a whole is affected. Stress by one partner has been shown to impact the other, and then in turn, the child or adolescent.[6] This trifecta of stress is a common experience and needs to be recognized at the doctor-patient level.

One way to address this is through counselling, whether alone or with the family group. For children and adolescents especially, it is important for them to learn how to approach these situations objectively by identifying parent's superficial behaviours in relation to the emotional outcomes. That is, recognizing the relationship between thoughts, feelings and actions; As well as, working towards increasing self-confidence, and ensuring that there is emotional support available and in place for that child, whenever needed.

Adolescent experiences of low-income or financial instability increase the risk of developing poor coping skills and setting up the next generation to be poor responders to financial stress.[5] It is, therefore, reasonable to conclude that poor behaviour in adolescents can be a consequence of insufficient coping skills due to financial stress in their parents.[5]

In the interplay between finances and relationships, it is important to highlight potential strain on finances due to relationships. Higher standards, but especially a disparity in opinions of such standards, can lead to strain in a relationship.[4] This would be a result of excessive spending behaviours to meet nearly impossible standards. In North American society, there exists extensive materialism that can easily put strain on any relationship, wherein one partner or both partners expect(s) material fulfillment above and beyond the household income generated.

The relationship between an adolescent and parent can become strained when the financial demand on the parent is increased due to resources or services required for the adolescent's development[6]. This would be especially true in low-income families, but can affect all levels of income. Not only would this be true for adolescents, but any child-parent relationship could potentially invite financial strain due to the demands of the child. When materialism and financial demands increase, it is important to consider the role of relationships on finances as a potential stressor for patients.

Occupation and Relationship Stress

The line between work and home duties has become blurred with the advent of technology. There is a price to pay for convenience and instant access and research is beginning to show this includes impacts on family relationships.

To assess the relationship between work and family demands, Higgins et al. studied the effects of role overload in dual-earner families.[3] Role overload was defined as perceived lack of time, resources and energy to complete collective tasks of defined roles, which included family demands, as well as work demands[3]. This is differentiated from other stress wherein tasks of roles overlap or two roles are expected to be performed at the same time. Role overload focuses on total time demand of all tasks delineated by those roles.

Their results found that women report higher levels of stress related to role overload than men, despite objective work roles being lower than men, and family roles being similar, according to the researchers. Alternatively, men were more likely to experience role overload from increased family demands.

Other research supports the finding that issues with role balance, particularly with work and relationships, tends to be more common among women.[1] For women, occupation roles can have a huge impact on relationship roles, even influencing the decision of whether to have children. For example, some women may delay starting a family due to pressures at work, to avoid others assuming that they cannot keep up with their workload once they have children, or trying to maintain their position at work.[1]

In terms of coping, one study found women were more likely to obtain support from outside the family or relationship.[3] Women were also more likely to cope by scaling back, on time for themselves. It was postulated this may relate to the societal view that women should be equal to men in the work force and, therefore, a woman's scaling back in the work force would be judged poorly. Yet, women

are also expected to carry out traditional roles at home, which may suggest time would need to be taken from another area, such self-care, to fulfill these expectations.

Men were not likely to cut back on work tasks due to fears of potential consequences and possibly while ascribing to the traditional breadwinner role typically associated with male gender.[3] This may have impacts on the family unit as a whole, as occupation appears to be the primary focus for both men and women today.

Conversely, relationships may also impact occupation. This is particularly relevant when there is stress within a relationship. Increased family demands can increase burnout and decrease satisfaction with work.[3] Additionally, effects of marital stress were found to carry over into occupation, with higher morning cortisol levels, higher daytime blood pressure and greater reports of perceived stress throughout the workday.[7] Thus, it is not only important to evaluate the role of work demands on family and relationships, but also the demands of family and relationships on work.

Financial and Occupation Stress

The combination of finances and occupation is arguably more closely linked to stress than the combination of finances and relationships. This is more commonly seen in under-employed patients when low-income jobs create financial stress. Unemployed and low-income earners have often been found to report higher levels of psychological stress than mid or high-income earners.[8]

Statistics Canada data from 2002 was used to analyze patterns among low and non-low income populations.[8] A random sample of over 36,000 Canadians was used to perform the Canadian Community Health Survey, Cycle 1.2: Mental Health and Well-Being. The information gathered included prevalence of mental health disorders (e.g., panic disorders or major depressive episode), mental health problems (e.g., drug and alcohol dependence or suicide), and psychological distress and well-being. Demographic information, income and social supports were some of the variables included. The sample was drawn from those aged 15 years and older, living in a private dwelling. These criteria represent approximately 98% of all Canadians, 15 years-of-age and older.

Those reported as low-income were typically between the ages of 24 and 65 years, single, female, and identified themselves as non-white.[8] Low-incomers were more likely to be an immigrant and without completion of post-secondary education low-incomers, comprising 17.9% of the population, were also least likely to have held a job in the year preceding the survey.[8]

In Canada, low-income populations were shown to have higher levels of psychological distress (28%) compared with non-low-income populations (19%).[8] This meant not having basic needs met and the presence of dysfunctional coping skills that were more prevalent in low-income populations. Not surprisingly, not having a job was only an important factor in low-income populations. Interestingly, higher education among low-income populations was an increased source of stress. This has been described elsewhere in the literature as possibly due to increased pressure to obtain a higher-income job and expectations for improved quality of life. An alternate view could be debt stress.

To study this relationship between financial stress on occupation further, Olson-Garriot et al. (2015) studied the effects of debt stress on students, and impacts on career development, both quantitatively and qualitatively.[9] Previous literature found that debt or finances were cited as affecting personal or professional functioning in 63% of psychology trainees.[10] In addition, a 2008 workforce study by the_American Psychological Association found similar results, with finances rated as the greatest disruption to the careers of psychologists who had recently graduated.[11]

One small study of 11 individuals found that increased total debt limited the participants' career choices.[9] In nine participants, they described how debt had caused them to restrict or even eliminate career choices. For example, one participant had considered a PhD, but in light of debt load, re-evaluated his plan so as to not incur more debt. Others noted that career goals were delayed due to debt. Debt also combined with personal wishes, namely family planning, to alter the chosen career path. The impacts of not being able to invest in savings, or buy a home were also described.

Additionally, higher social status was correlated with increased stress.[9] Pressures to maintain status with occupation choices and clearance of debt were increased, contributing to overall stress. Overall, participants cited the desire to maintain their status, which was evidently less likely, given their debt load.

Improving balance

It's important to note that there is no one-size-fits-all for life balance, since each of us faces our own unique life challenges, roles, and relationships. However, there are principles to stress adaptation and tools that may be used to achieve success in a role, without compromising self-care.

Positive psychology and overcoming negativity

Promoting positive human development and functioning, as a means of adaptation, can lead to positive states of well-being.[12] Some psychologists claim that this positive outlook and behaviour can improve an individual's leadership skills.[12] They manage their own responsibilities more effectively and teach others to do the same. These skills can overlap between various life roles: the positive associations from work, for example, can be utilized in the home, making both family and home life easier to manage. Our satisfaction in one area of our lives can be superimposed on another. For example, being negative at work, or having a terrible time at work with an employer or colleague can cause negative emotions that we may bring home and could negatively impact job satisfaction.[13] However, if one is more optimistic about work and comes home happy or inspired, those positive emotions may be reflected in those around us.[12]

To our employees, children and peers, we have the power to be a role model. Keeping a positive mindset and using optimistic management styles can promote better relationships at work and home and improve life balance in all our roles. It requires a conscious effort.[12]

The power of positivity can be undervalued. As practitioners, we often see cases of patients with low to depressed moods. In practicing and utilizing optimistic emotions, we increase the likelihood of being more successful in meeting goals and improving relationships.[12] "Positive psychological capital" consists of four resources that we can access: confidence or self-efficacy, optimism, hope or goal perseverance, and resiliency to problems.[12] Creativity and creative outlets can elicit similar responses and serve as a means of positive expression. In contrast, harbouring negative thoughts and emotions can keep us in a constant fight-or-flight state contributing to chronic stress or adrenal fatigue.

Self-care

Maintaining a better balance between life roles and self-care has been linked to an overall healthier lifestyle pattern, including the ability to manage stress more effectively.[2] Self-care need be a priority to reduce burnout and exhaustion. An analogy is a person in an airplane with a child. The plane experiences turbulence and the oxygen masks are deployed. By taking care of oneself first, one will have more energy and oxygen to help others.

Increasing the amount of leisure activities is beneficial for one's own self-rated health and may decrease the rate of illness[2]. Participating in activities such as walking, cycling, yoga, music, and meditation can provide relaxation and improve sleep, mood and energy.[2]

As part of stress management and life balance, ask patients: What activities do you do for you? This should not include sitting in front of the television, or binging on Netflix; this should include regularly practiced hobbies, sports, self-care and/or creative outlets. Second, how often does the patient participate in these activities? The activities, including exercise, should be scheduled each day as part of our responsibilities, both to ourselves and others.

Coping

Coping with stress, managing roles and emotions effectively and positively, is a part of self-care. We must learn how to resolve conflict, as it occurs, on a case-by-case basis, as well as taking proactive measures to prevent life role conflict from occurring in the future.[12] Coping strategies are pivotal in speaking about management of stress appropriately, as some strategies may be less conducive to health than others. The ability to use the most effective strategy is also situation-dependent, which will be outlined in the context of financial, relationship and work stress below.

Coping strategies are usually divided into two groups, problem-focused strategies, which include direct actions to address the stressor, and emotion-focused coping, which involves emotional regulation to manage the stressor (such as avoidance or minimization).[14] These strategies involve an attempt to reduce negative emotional responses such as embarrassment, fear, anxiety, depression and frustration. Healthy techniques for employing emotion-focused coping may include emotional writing or journaling,[15] mindfulness or meditation practices, or suppressing negative thoughts with or without distraction. Individualized and private writing can be an incredibly powerful tool. One study showed that individuals who wrote about stressful life events showed greater long-term mental health, improved immune function and fewer visits to doctor's offices.[15]

Emotion-focused coping techniques also include unhealthy forms of self-medication, such as: using drugs or consuming food or alcohol in an attempt to suppress negative emotions. Avoidance in the form of substance abuse or impulsive behaviours could put a strain on relationships, increase financial strain, and may impact functioning in the work place. Therefore, our focus as naturopathic doctors would be to guide patients to make healthy choices for emotion-focused coping techniques, opting for meditation or journaling as opposed to drinking alcohol or suppressing negative emotions.

In dealing with the financial stress of accrued debt, avoidant coping strategies were found to be the most effective coping strategy in psychology trainees.[9] In this situation, it was proposed that perhaps during psychology graduate school there were few problem-focused strategies that could be employed. Thus, avoidance could potentially have decreased stress in the short-term to allow for greater focus on long-term goals.

In relationships, most research has found problem-focused coping is more adaptive and health-promoting than emotion-focused coping, such as withdrawal or avoidance, which tends to lead to relationship deterioration. It is also prudent to recognize dyadic coping: one partner's attempt to cope with the perceived stress of their partner. Overall, females were more likely to engage in problem-focused dyadic coping, such as requiring action from their partner, whereas males were more likely to cope using emotion-focused strategies, such as withdrawal.[16]

The tendency to place more value on work is important to consider when assessing adaptation to stress. Although it has been shown that men obtain some benefit in restricting work roles, this was not the case for women.[3] Men and women, who both earned income, both reduced overload-stress from family and work demands by delegating more tasks at home; however, scaling-back in roles at home did not mitigate stress, even though it was the most common strategy. In particular, women tended to sacrifice self-care as a consequence of scaling back at home.[3]

The experience of stress was not isolated to one family member and was amplified by the other partner. This in turn affected the adolescent, which led to behavioural changes in the adolescent, as a poor adaptation of stress.[6] Dyadic coping can be a positive impact on relationship satisfaction.[16] Seeing the family as a whole, as an

extension of the patient, is necessary to understand the depth of the stress experience. Referral to a therapist for the family unit could help increase communication between family members and improve resiliency for coping.

The use of empathetic responding had a positive effect on the relationship and in one study resulted in less marital tension the following day.[17] This was in the context of greater perceived stress, but it is a therapeutic technique that can be used regularly with patients to decrease perception of stress.

Whether for ourselves personally as healthcare providers, or in coaching our patients and their partners/family members, empathetic responding simply involves actively listening, or reflectively listening, and responding. This results in a mutual trust and understanding between the two parties, as well, it can be utilized as a form of mindfulness: Mindful listening. Mindful listening requires your full attention on the person you're conversing with. When someone is speaking, pay attention and avoid all interruptions until they have completely finished speaking. If the mind starts to wander, be aware of it and bring the attention back to listening. After the other person has stopped speaking, take a breath and reflect before delivering a response.

Naturopathic doctors, in viewing stress and its impact on our patients, cannot isolate any single factor. Treating the whole person requires recognition of the multiple life roles of a patient, the interplay between these roles, and the various coping strategies available to assist the patient in adapting to stress. By helping the patient identify life roles, awareness can be brought to the contributing stressors within each context. As detailed above, the context can be crucial to determining the most appropriate coping strategy. However, the more life roles, the greater potential for varied stressors. Therefore, with a holistic understanding of this interaction, we can help our patients employ more appropriate coping. With guidance, the patient can become attuned to whether a problem-focused (direct action) or emotional-focused (emotion management) approach is more beneficial within the context of their stress. They can begin to assess autonomously whether, for example, they need more information about the situation or can practically divide the task at hand, or if they in fact cannot control the situation. In the latter case, problem-focused coping is not the best strategy. If the patient can recognize that the situation is not in their control, they can apply emotion-focused tools (meditation, seeking counseling etc.) to decrease the stress of the situation. As NDs, we can help our patients develop this skill and offer our continued empathic responding, which is, in and of itself, an important and effective stress-management strategy.

About the Authors

Dr. Sarah King, ND is a licensed naturopathic doctor, who graduated from the Canadian College of Naturopathic Medicine. Prior to completing her medical studies, she received her Honors Bachelor of Science in Biology at Nipissing University. Sarah has a passion for women's health and treats a wide variety of health conditions including menstrual disorders and hormone balancing, fertility, prenatal care, and mental health/anxiety. Sarah is currently practicing at Upper Beach Health & Wellness in Toronto. Outside the office Sarah is an avid runner with a love of the GTA's best forest trails. For more information, visit sarahkingnd.com.

Dr. Chelsea Schreiner, ND has always been passionate about two things: helping people and the environment. In her private practice of River Rock Health in Toronto, Chelsea helps people learn to Live in Balance by understanding the connection between impacts of our environment, including our own internal environment, and health. Using the tools of naturopathic medicine, connection with self, and support of the body's natural healing ability, Chelsea helps people along their healing journey of many chronic conditions.

References

1. Lester, J. Cultures of Work–Life Balance in Higher Education: A Case of Fragmentation. *Journal of Diversity in Higher Education* 2015; 8(3):139–156
2. Wu, S., Xuan, Z., Li, F., Xiao, W., Fu, X., Jiang, P., Chen, J., Xiang, L., Liu, Y., Nie, X., Luo, R., Sun, X., Kwan, H., and Zhao, X. Work-Recreation Balance, Health-Promoting Lifestyles and Suboptimal Health Status in Southern China: A Cross-Sectional Study. *Int J Environ Res Public Health.* 2016; 13(3):E339
3. Higgins, C.A., Duxbury, L.E., and Lyons, S.T. Coping with overload and stress: Men and women in dual-earner families. *Journal of Marriage and Family.* 2010; 72(4):847-859
4. Falconier, M.K, and Epstein, N.B. Couples experiencing financial strain: What we know and what we can do. *Family Relations Interdisciplinary Journal of Applied Family Studies.* 2011; 60:303-317
5. Wadsworth, M.E., Tali Raviv, M.A., Compas, B.E., and Connor-Smith, J.K. Financial Stress Parent and Adolescent Responses to Poverty-Related Stress. *Journal of Child and Family Studies.* 2005; 14(2):283-298
6. Ponnet, K. Financial stress, parent functioning and adolescent problem behavior: An actor-partner interdependence approach to family stress process in low-, middle-, and high-income families. *J Youth Adolescence.* 2014; 43:1752-1769
7. Barnett, R.C., Steptoe, A., and Gareis, K.C. Marital-role quality and stress-related psychobiological indicators. *Ann Behav Med.* 2005; 30(1):36-43
8. Caron, J., and Liu, A. Factors associated with psychological distress in the Canadian population: A comparison of low-income and non low-income sub-groups. *Community Ment Health J.* 2011; 47:318-330
9. Olson-Garriott, A.N., Garriott, P.O., Rigali-Oiler, M. and Chao, R. C-L. Counseling psychology trainees' experiences with debt stress: A mixed methods examination. *J Counseling Psych.* 2015; 62(2):202-215
10. El-Ghoroury, N.H., Galper, D.I., Sawaqdeh, A., and Bufka, L.F. Stress, coping, and barriers to wellness among psychology graduate students. *Training and Education in Professional Psychology.* 2012; 6: 122-134
11. Michalski, D., Mulvey, T., and Kohout, J. 2008: APA survey of psychology health service providers. *APA Center for Workforce Studies.* 2010;
12. Morganson, V.J., Litano, M.L, O'Neill, S.K. Promoting work-family balance through positive psychology: A practical review of the literature. The Psychologist-Manager Journal. 2014; 17(4):221-244
13. Bulgar, C.A., Hoffman, M.E., Matthews, R.A. Work and Personal Life Boundary Management: Boundary Strength, Work/Personal Life Balance, and the Segmentation–Integration Continuum. *Journal of Occupational Health Psychology.* 2007;12(4):365-375
14. Seiffge-Krenke, I. Coping with relationship stressors: The impact of different working models of attachment and links to adaptation. *Journal of Youth and Adolescence.* 2006; 35(1):25-39
15. Pennebaker, J. W. Writing about emotional experiences as a therapeutic process. *Psychological Science*, 1997; 8: 162–166
16. Herzberg, P.Y. Coping in relationships: the interplay between individual and dyadic coping and their effects on relationship satisfaction. *Anxiety, Stress & Coping.* 2013; 26(2):136153 http://dx.doi.org/10.1080/10615806.2012.655726
17. O'Brien, T.B., DeLongis, A., Pomaki, G., Puterman, E., and Zwicker, A. Couples coping with stress: The role of empathetic responding. *European Psychologist.* 2009; 14(1):18-29.

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