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Investigation into complementary and integrative medicine practitioners' clinical experience of intestinal permeability: A cross-sectional survey

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ABSTRACT

Background: This study aims to explore the conditions complementary and integrative medicine (CIM) practitioners associate with increased intestinal permeability (IP) and the methods they employ to assess IP.

Methods: A cross-sectional survey of naturopaths, nutritionists and Western herbal medicine practitioners was undertaken (n = 227) through the Practitioner Research and Collaboration Initiative (PRACI) network.

Results: CIM practitioners (n = 36, response rate 15.9%) associate IP with gastrointestinal (100.0%), autoimmune (91.7%), skin (91.7%), neurological (80.6%), respiratory (55.6%) and liver-related conditions (44.4%). CIM practitioners frequently treat IP (72.7%); observing a minimum 3 months of treatment is required to resolve IP. Patient's signs and symptoms were the main reasons CIM practitioners suspected IP (94.1%).

Conclusion: CIM practitioners observe a clinical link between IP and a wide range of conditions, including those not yet recognised within the literature. The clinical experience of CIM practitioners holds substantial value to the advancement of research and the clinical management of IP.

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1. Introduction

Complementary and integrative medicine (CIM) practitioners use the “best” available methods from conventional and complementary medicine for optimal patient care [1]. CIM practitioners such as naturopaths, nutritionists and Western herbal medicine practitioners see a large variety of health conditions in clinical practice, with over 72% reporting a clinical interest in woman's health, general health and well-being and digestive disorders [2]. CIM practitioners may view disease aetiology through a different perspective in accordance with naturopathic philosophies underpinning their clinical practice [3]. Through this clinical experience and deductive reasoning, CIM practitioners may provide insights into the understanding of disease aetiology, pathogenesis and

methods to assess digestive health not yet published in the literature [4].

One aspect of digestive health is increased intestinal permeability (IP) which involves the loss of tight junction integrity between epithelium cells of the small intestine [5]. The consequence of IP in health and disease is not fully understood, however, IP has been suggested to play a role in the aetiology or pathogenesis of Crohn's disease [6], coeliac disease [7] and type 1 diabetes [7,8], and to exacerbate the pathogenesis of primary liver disease [9]. Furthermore, IP is suggested to be associated with a wide range of gastrointestinal conditions, autoimmune conditions, liver-related conditions, metabolic conditions and neurological conditions [10–14].

There is limited published literature on the clinical presentation of IP as symptoms can vary and are often non-specific [15,16]. Although the list of conditions associated with IP appears to be diverse, common symptomatology may be shared between individuals with IP. Unverified non-specific symptoms of IP may include bloating, flatulence, diarrhoea, depression and dermatitis

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[15,16]. Current evidence suggests that ameliorating IP corresponds with a reduction in symptoms such as abdominal pain, headaches and tiredness [17] and inducing IP may increase disease severity [18–20]. IP may contribute to disease exacerbation through mechanisms driven by both inflammation and dysbiosis [21–25]. The correlation between IP and disease severity may suggest that treating IP may consequently alter the presentation and progression of associated diseases.

However, the ideal treatment time to resolve IP and any corresponding symptoms remains unknown. The development and thereby the treatment of IP is suggested to be multifactorial, inflecting the time required to resolve IP [26,27]. Gene expression of tight junction proteins involved in IP is suggested to be influenced in a time-dependent manner [28]. There is no set time frame for clinical trial's investigating a treatment intervention for IP, with variation generally ranging from 4–12 weeks [29,30]. Insufficient treatment time may pose a limitation on clinical trials, as the modulation of IP appears to be time-dependent, suggesting that appropriate treatment length may coincide with a greater improvement of IP [31].

Drawing on the clinical experience of CIM practitioners who provide clinical care to individuals with IP, may offer insights to address some of the research knowledge gaps previously mentioned. Therefore, the aim of this study is to explore and describe the conditions CIM practitioners associate with IP and the methods they employ to assess IP in clinical practice.

2. Methods

2.1. Design

The study consisted of a cross-sectional electronic, self-administrated survey and was conducted with approval from the Human Research Ethics Committees (HREC) of Endeavour College of Natural Health (#20170762).

2.2. Setting

The Practitioner Research and Collaboration Initiative (PRACI) is a practice-based research network (PBRN) for CIM practitioners and is designed to facilitate collaboration between researchers and practitioners [32]. The PRACI membership provides researcher access to a national CIM practitioner population with preliminary analysis suggesting representativeness of some CIM professions [2]. The PRACI Steering Committee approved the study following the review of a formal Expression of Interest application (#201700614).

2.3. Participants

The source population approached to participate in this study were members of PRACI who identified as holding a diploma qualification or above in naturopathy, nutrition or Western herbal medicine (n = 227). Eligibility to participate in the study also required participants to be currently working within the clinical practice in Australia.

2.4. Recruitment

The survey invitation was emailed, on behalf of the research team, by PRACI administration to all PRACI members complying with the eligibility criteria. The survey was open for six weeks between August and September 2017. Two follow-up invitations were emailed to the sample population: the first was two weeks after the initial invitation and the second one-week before data collection was concluded.

2.5. Survey

The survey was piloted with six qualified CIM practitioners not associated with PRACI for validity to assess language clarity, the time required and relevance, with corrections made accordingly. The survey included three main domains: *demographics, qualifications and clinical experience, conditions associated with IP and clinical improvement and testing methods and frequency of treatment.*

2.5.1. Demographics, qualifications and clinical experience

Basic demographic attributes such as gender, state/territory, level of professional qualification, average hours spent in clinical practice each week and years of clinical experience was included. Participant response to this section was used to determine respondents' eligibility to participate in the survey.

2.5.2. Conditions associated with IP and clinical improvement

A list of 61 different conditions was selected from published epidemiological research. Participants were asked, 'In your clinical experience as a CIM practitioner, which of the following (corresponding disease category) have you observed to have ANY association with IP? Select ALL that apply.' From the categories participants select, a list of corresponding conditions became available with a five-point Likert scale to explore the degree of observed association with IP. These same conditions were used to explore the level of improvement participants observe from treating IP. A five-point Likert scale ranging from "major improvement" to "no improvement" was used to gauge the level of improvement participants observe from treating IP.

2.5.3. Testing methods and frequency of treatment

A five-point Likert scale was used to explore the frequency with which participants test and treat patients for IP. A number of questions explored the factors that influenced participants' decision to test IP.

2.6. Data collection

Data collection was undertaken by an online survey administered through *SurveyGizmo*. Once data collection period concluded, data both complete and incomplete were transferred to a spreadsheet before analysis. To limit bias, authors were restricted from participating in the survey. Consent was obtained electronically from participants before the commencement of the survey.

2.7. Data analysis

Data were reported as frequencies and percentages. Chi-square tests were also used to examine associations between basic demographics and observed time to resolve IP. Statistical analysis was undertaken using STATA[®] 14.

3. Results

3.1. Participant characteristics

A total of 37 applicants responded to the survey with 36 meeting the eligibility criteria and completing the survey (response rate 15.9%). The majority of participants were female (n = 29, 80.6%) and worked in clinical practice in either Victoria (n = 16, 44.4%) or New South Wales (n = 11, 30.6%). Participants held a vocational (diploma/advanced diploma) (n = 15, 41.7%) or university (bachelor degree and above) (n = 21, 58.3%) qualification in naturopathy (n = 32) and/or nutrition (n = 20) and/or Western herbal medicine (n = 12), many of which held dual qualifications. Years of clinical

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