

**Table S1: Search strategy in OVIDSP**

Database: Ovid MEDLINE(R)

Search Strategy:

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- 1 Health Knowledge, Attitudes, Practice/ (69312)
  - 2 barrier\$.mp. (166811)
  - 3 change.mp. (726702)
  - 4 practice.mp. (640043)
  - 5 clinical.mp. (2788042)
  - 6 modification.mp. (180134)
  - 7 improvement.mp. (360738)
  - 8 Area Health Education Centers/ or Attitude to Health/ or Health Education/ or Health Education, Dental/ or "Attitude of Health Personnel"/ or Health Promotion/ or Health/ (263257)
  - 9 Health Behavior/ or Behavior/ (58004)
  - 10 1 or 4 or 8 or 9 (884755)
  - 11 3 or 6 or 7 (1217052)
  - 12 10 and 11 (83647)
  - 13 2 and 12 (3934)
  - 14 5 and 13 (1349)
  - 15 survey.mp. (308253)
  - 16 questionnaire.mp. or Questionnaires/ (402475)
  - 17 15 or 16 (628026)
  - 18 14 and 17 (401)
  - 19 Guideline Adherence/ (19180)
  - 20 18 and 19 (41)

**Table S2: Items in each questionnaire covered/ not covered by various domains of TDF**

|  | Total number of items in each questionnaire | Domains of TDF |        |   |                            |          |                            |               |           |       |  |                                     |                   |         |                       |                    |
|--|---|----------------|--------|---|----------------------------|----------|----------------------------|---------------|-----------|-------|--|-------------------------------------|-------------------|---------|-----------------------|--------------------|
|  |   | Knowledge      | Skills | Social/ Professional/ Role and Identity | Beliefs about capabilities | Optimism | Beliefs about consequences | Reinforcement | Intention | Goals | Memory, Attention and Decision processed | Environmental Context and Resources | Social influences | Emotion | Behavioral Regulation | Not covered by TDF |
| <b>Papers [1–50]</b>   |   |                |        |   |                            |          |                            |               |           |       |  |                                     |                   |         |                       |                    |
| Assessment of perceived barriers in self-care of insulin-requiring diabetic patients | 28  | 0              | 0      | 0                                       | 16                         | 3        | 2                          | 0             | 1         | 1     | 0  | 1                                   | 0                 | 3       | 1                     | 0                  |
| Evaluating and Overcoming Barriers to Taking Abuse Histories                         | 14  | 0              | 3      | 2                                       | 0                          | 0        | 1                          | 1             | 0         | 2     | 1  | 0                                   | 0                 | 3       | 0                     | 1                  |
| The “ICK” Factor, Anticipated Regret, and Willingness to Become an Organ Donor       | 16  | 0              | 0      | 0                                       | 0                          | 4        | 7                          | 1             | 1         | 0     | 0  | 0                                   | 0                 | 1       | 0                     | 2                  |
| Identifying Perceived Personal Barriers to Public Policy Advocacy Within Psychology  | 11  | 3              | 0      | 1                                       | 0                          | 0        | 1                          | 0             | 2         | 0     | 1  | 2                                   | 0                 | 1       | 0                     | 0                  |
| Stigma and Barriers to Mental Health Care in Deployed Canadian Forces Personnel      | 19  | 1              | 0      | 0                                       | 2                          | 0        | 7                          | 0             | 0         | 0     | 0  | 6                                   | 3                 | 0       | 0                     | 0                  |
| Behavioral Health in the Pediatric Primary Care Setting: Needs, Barriers, and        | 6   | 1              | 0      | 0                                       | 0                          | 0        | 0                          | 0             | 0         | 0     | 0  | 4                                   | 0                 | 1       | 0                     | 0                  |

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| Implications for Psychologists  |    |   |   |   |   |   |   |   |   |   |   |    |   |   |   |   |
| Perceived Barriers to Care Among Veterans Health Administration Patients With Posttraumatic Stress Disorder             | 25 | 1 | 0 | 3 | 1 | 4 | 1 | 0 | 3 | 1 | 1 | 7  | 2 | 1 | 0 | 0 |
| Barriers to Enteral Feeding Critically Ill Patients Questionnaire   | 26 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 20 | 2 | 1 | 0 | 0 |
| Providing education on evidence-based practice improved knowledge but did not change behavior- a before and after study | 5  | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3  | 0 | 0 | 0 | 0 |
| Facilitators and Barriers in Implementing Buprenorphine in the Veterans Health Administration                           | 58 | 2 | 0 | 5 | 2 | 1 | 5 | 1 | 0 | 0 | 1 | 31 | 4 | 5 | 1 | 0 |
| Barriers to Implementing Treatment Integrity Procedures- Survey of Treatment Outcome Researchers                        | 30 | 3 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 17 | 4 | 0 | 1 | 1 |
| Barriers to Engagement in Sleep Restriction and Stimulus Control in Chronic Insomnia                                    | 5  | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0  | 1 | 3 | 0 | 0 |
| Measurement of Men's Help Seeking: Development and Evaluation of the Barriers   | 31 | 2 | 0 | 0 | 8 | 1 | 2 | 0 | 0 | 2 | 3 | 3  | 2 | 8 | 0 | 0 |

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| to Help Seeking Scale  |    |   |   |   |   |   |   |   |   |   |   |    |    |    |   |   |
| Perceived Employment Barriers and Their Relation to Workforce-Entry Intent Among People With HIV/AIDS              | 17 | 0 | 1 | 0 | 6 | 0 | 7 | 0 | 0 | 0 | 0 | 1  | 1  | 1  | 0 | 0 |
| Patterns-Correlates- and Barriers to Medication Adherence Among Persons Prescribed New Treatments for HIV Disease  | 10 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 2 | 1  | 2  | 0  | 2 | 1 |
| Faculty knowledge, attitudes, and perceived barriers to teaching evidence-based nursing                            | 27 | 2 | 0 | 2 | 1 | 0 | 4 | 0 | 0 | 0 | 0 | 0  | 15 | 2  | 0 | 1 |
| Implementing quality indicators in intensive care units: exploring barriers to and facilitators of behavior change | 11 | 2 | 0 | 1 | 1 | 1 | 3 | 0 | 1 | 0 | 0 | 1  | 0  | 0  | 1 | 0 |
| Barriers to participation in HIV drug trials   | 27 | 1 | 0 | 1 | 1 | 3 | 2 | 0 | 0 | 0 | 1 | 7  | 5  | 5  | 1 | 0 |
| The Yorkshire BARRIERS project-diagnostic analysis of barriers to research utilization                             | 29 | 2 | 1 | 1 | 3 | 2 | 3 | 0 | 0 | 0 | 0 | 10 | 3  | 1  | 1 | 2 |
| The Youth Form of the Motivators of and Barriers to Health-Smart Behaviors Inventory                               | 67 | 7 | 0 | 0 | 3 | 3 | 4 | 0 | 3 | 2 | 5 | 15 | 7  | 14 | 4 | 0 |

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| For me the taste of soy is not a barrier to its consumption. And how about you?  | 13 | 0 | 0 | 0 | 0 | 3 | 6 | 0 | 0 | 0 | 0 | 3  | 0 | 1 | 0 | 0 |
| Pediatric Intensive Care Unit Participatory Action Research (PICU PAR):.   | 26 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 14 | 4 | 0 | 0 | 4 |
| Barriers to Care Questionnaire: Reliability, Validity, and Responsiveness to Change Among Parents of Children With Asthma    | 38 | 4 | 2 | 2 | 1 | 2 | 1 | 0 | 0 | 0 | 2 | 19 | 2 | 1 | 0 | 2 |
| Barriers to feeding critically ill patients: A multicenter survey of critical care nurses                                    | 9  | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 5  | 1 | 0 | 0 | 1 |
| Measuring Perceived Barriers to Healthful Eating in Obese, Treatment-seeking Adults  | 14 | 2 | 0 | 0 | 6 | 0 | 1 | 0 | 0 | 0 | 0 | 3  | 0 | 2 | 0 | 0 |
| "I'm Not One of Them": Barriers to Help-Seeking Among American Indians With Alcohol Dependence                               | 37 | 4 | 0 | 0 | 3 | 1 | 3 | 1 | 3 | 0 | 0 | 7  | 6 | 6 | 1 | 2 |
| Barriers to implementing infection prevention and control guidelines during crises: Experiences of health care professionals | 24 | 1 | 0 | 4 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 14 | 1 | 0 | 0 | 0 |
| Barriers to treatment  | 19 | 1 | 2 | 0 | 3 | 0 | 1 | 0 | 0 | 1 | 0 | 4  | 5 | 2 | 0 | 0 |

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| among African Americans with obsessive-compulsive disorder  |    |   |    |   |   |   |   |   |   |   |   |    |   |   |   |   |
| Barriers to treatment of pediatric obstructive sleep apnea: Development of the adherence barriers to continuous positive airway pressure (CPAP) questionnaire | 12 | 0 | 0  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 3  | 0 | 6 | 0 | 1 |
| Changes in Young Women's Awareness, Attitudes, and Perceived Barriers to Using Emergency Contraception  | 11 | 1 | 0  | 0 | 0 | 0 | 5 | 0 | 0 | 1 | 0 | 2  | 1 | 1 | 0 | 0 |
| Communication barriers perceived by older patients and nurses   | 30 | 0 | 28 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0  | 0 | 2 | 0 | 0 |
| Development and psychometric testing of a short version of the Barriers Questionnaire-Taiwan form for cancer patient  | 9  | 1 | 0  | 0 | 0 | 2 | 4 | 0 | 0 | 0 | 1 | 0  | 1 | 0 | 0 | 0 |
| A tool to assess barriers to adherence to hand hygiene guideline  | 36 | 4 | 0  | 6 | 2 | 0 | 7 | 0 | 0 | 0 | 0 | 15 | 0 | 0 | 2 | 0 |
| Patient-Related Barriers to Fatigue Communication: Initial Validation of the Fatigue Management   | 28 | 2 | 0  | 4 | 4 | 0 | 6 | 0 | 0 | 1 | 0 | 1  | 2 | 3 | 3 | 2 |

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| Barriers Questionnaire   |    |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| Patterns of physical activity among American Indian children- an assessment of barriers and support                                    | 10 | 0 | 0 | 0 | 2 | 0 | 1 | 0 | 0 | 0 | 0 | 6 | 1 | 0 | 0 | 0 |
| What Prevents Adolescents from Seeking Help After a Suicide Education Program?   | 26 | 2 | 0 | 0 | 3 | 1 | 8 | 0 | 0 | 1 | 0 | 5 | 5 | 1 | 0 | 0 |
| Addressing barriers to change-an RCT of practice-based education to improve the management of hypertension in the elderly              | 8  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 1 | 0 | 0 | 0 |
| Barriers to Caregiver Administration of Pain Medication in Hospice Care  | 6  | 0 | 0 | 0 | 1 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| Barriers to the Implementation of Physical Education (PE) Assessment in Hong Kong  | 15 | 1 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 9 | 3 | 0 | 0 | 0 |
| Barriers to evidence-based practice in primary care  | 14 | 0 | 0 | 0 | 5 | 0 | 1 | 1 | 0 | 1 | 0 | 5 | 1 | 0 | 0 | 0 |
| Comparison of Evidence-Based Practice Between Physicians and Nurses-A National Survey of Regional Hospitals in Taiwan- Barriers To EBP | 10 | 1 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 0 | 1 |

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| Doctors' traits perceived by Japanese nurses as communication barriers- A questionnaire survey  | 5  | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 |
| Impact of a Behavioral-Based Intervention on Inspiratory Muscle Training Prescription by a Multidisciplinary Team                               | 7  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 0 | 3 |
| Barriers and facilitators to implementing shared decision-making in clinical practice- a systematic review of health professionals' perceptions | 35 | 2 | 1 | 2 | 2 | 0 | 8 | 0 | 0 | 0 | 1 | 9 | 6 | 1 | 0 | 0 | 3 |
| Neighborhood Walking Among Overweight and Obese Adults- Age Variations in Barriers and Motivators   | 8  | 0 | 0 | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 |
| Patient-related barriers to pain management- the barriers questionnaire II(BQ-II)   | 8  | 0 | 0 | 0 | 1 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |
| Practitioner and Organizational Barriers to Evidence-based Practice of Physical Therapists for People With Stroke                               | 10 | 1 | 2 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 4 | 1 | 0 | 0 | 0 | 1 |
| Preliminary validity of the barriers to treatment   | 16 | 0 | 0 | 0 | 2 | 1 | 1 | 0 | 0 | 0 | 2 | 7 | 2 | 0 | 0 | 0 | 1 |



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| adherence questionnaire in fibromyalgia-combining quantitative and focus group data                             |     |    |    |    |    |    |     |   |    |    |    |     |    |    |    |    |
| Barriers to Psychologists Seeking Mental Health Care  | 6   | 0  | 0  | 1  | 1  | 0  | 0   | 0 | 0  | 0  | 0  | 2   | 1  | 1  | 0  | 0  |
| Reliability of a dietary questionnaire on food habits, eating behavior and nutritional Knowledge of adolescents | 9   | 6  | 0  | 0  | 0  | 0  | 0   | 0 | 0  | 0  | 0  | 1   | 2  | 0  | 0  | 0  |
| <b>Total</b>  | 961 | 63 | 45 | 37 | 87 | 35 | 119 | 6 | 14 | 14 | 25 | 290 | 99 | 78 | 18 | 31 |

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**Table S3: The structure of original TDF and its changes over time**

The original TDF (2005) was structured on 33 psychological change theories (motivation, action and organizational theories) and consisted of 128 explanatory constructs. The original version categorized the constructs into 12 domains for explaining behavior change: (1) knowledge, (2) skills, (3) social/professional role and identity, (4) beliefs about capabilities, (5) beliefs about consequences, (6) motivation and goals, (7) memory, attention and decision processes, (8) environmental context and resources, (9) social influences, (10) emotion regulation, (11) behavioral regulation, and (12) nature of the behavior. In the TDF validation process in 2012 for developing a refined version, the number of constructs decreased to 84, expressed in 14 different domains.<sup>1</sup> The “motivation and goals” domain was separated into two domains of “intentions” and “goals”.<sup>1,2</sup> The “beliefs about consequences” was also separated into two domains; “belief about consequences” and “reinforcement”. Also a separate domain called “Optimism” was created from the “beliefs about capabilities”. Finally, the domain “nature of the behaviors” was removed from the original version.<sup>1,2</sup>

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