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Avant-propos

Robyn WINTERBOTTOM Rédactrice en chef

Cher lecteur, chère lectrice,

C'est avec beaucoup d'enthousiasme que je vous présente le deuxième volume de la Revue étudiante interdisciplinaire des sciences de la santé (RISS). Au premier cycle, on met de plus en plus l'accent sur l'apport et la participation à la recherche. Pendant leurs études, de nombreux étudiants de la Faculté des sciences de la santé de l'Université d'Ottawa font des recherches de grande utilité. La RISS a pour mandat de donner l'occasion aux étudiants de premier cycle de parfaire leur recherche en publiant et diffusant leurs travaux. En effet, lorsqu'un chercheur écrit pour un auditoire d'érudits, cela complète sa formation universitaire, facilite les débats scientifiques et ajoute de la crédibilité à ses travaux. Notre Journal s'est donc engagé à faciliter l'exploration intellectuelle parmi les multiples disciplines des sciences de la santé, et je suis certain que les douze articles choisis pour ces deux numéros reflètent adéquatement notre philosophie.

Ce Journal n'aurait pas pu être publié sans l'aide de nombreux intervenants. Le comité de révision des pairs se compose de professeurs de l'École interdisciplinaire des sciences de la santé (ÉISS), ainsi que de plusieurs professionnels du domaine. Grâce à leur expertise et à leur dévouement constant envers cette initiative, l'intégrité des documents publiés est garantie.

Je tiens aussi à remercier Dr. Raywat Deonandan, dont l'engagement et les conseils se sont avérés les piliers de la croissance et du développement du RISS. L'enthousiasme et le soutien qu'il apporte aux étudiants de premier cycle vont bien au-delà des attentes normales vis-à-vis d'un professeur.

Pour conclure, je tiens à remercier aussi les étudiants qui font partie du comité de rédaction de cette année. Leur éthique de travail et leurs idées novatrices se sont avérées très précieuses dans le cadre du processus de publication.

J'ai apprécié au plus haut point mon travail à la RISS, et je suis persuadé que la passion constante et le travail acharné des étudiants de premier cycle garantiront la réussite et la pérennité de cette initiative.

Amicalement,

Robyn Winterbottom
BHSc, Université d'Ottawa

MD Candidate, Université McMaster

Foreword

Robyn WINTERBOTTOM Editor-in-Chief

Dear Reader,

I am so thrilled to present the second volume of the Interdisciplinary Student Journal of Health Science (IJHS). Emphasis on scholarly development and participation in research has become a mainstream feature of undergraduate education. Many students in the Health Sciences faculty at the University of Ottawa have been, or are currently involved with, valuable research during their education. The aim of the IJHS is to offer undergraduates the opportunity to experience completion of the research process through publication and dissemination of their work. Writing for an academic audience complements scholarly development, facilitates scientific discussion, and adds credibility to students' work. The journal is committed to intellectual exploration across multiple disciplines in the health sciences; and I believe that the twelve articles selected for these two issues effectively represent our philosophy.

The publication of the journal would not have been possible without the support of numerous individuals. The peer review panel was composed of professors in the Interdisciplinary School of Health Sciences, as well as several professionals within the community. Their expertise and continued dedication to this initiative has been vital to the integrity of the literature within these pages.

I also extend my continued appreciation to Dr. Raywat Deonandan, whose commitment and guidance has been the cornerstone of the IJHS' growth and development. His enthusiasm and support for undergraduate students has gone above and beyond any expectations I could have for a professor.

Finally I would like to thank the students on this year's editorial committee. Their work ethic and innovative ideas have been invaluable to the publication process.

I have thoroughly enjoyed my work with the IJHS and I have no doubt that the continued passion and hard work of undergraduate students will enable success and longevity of this initiative.

Sincerely,

Robyn Winterbottom
BHSc, University of Ottawa

MD Candidate, McMaster University

Avant-propos

Raywat DEONANDAN Éditeur exécutif et superviseur académique

Il est de plus en plus admis par tous que l'éducation ne saurait être complète sans la communication de ses idées et le partage de ses observations. En vérité, pour beaucoup, la transparence est la marque de la science. C'est la raison pour laquelle les journaux scientifiques révisés par des pairs, quels que soient leur impact, leur diffusion et leur degré de sophistication, demeurent non seulement pertinents, mais également essentiels à la maturation de la science et de ses étudiants. Dans cette perspective, je suis fier que ce Journal ait survécu au-delà de son premier numéro, à titre d'initiative entièrement mise en œuvre par les étudiants. Je suis persuadé qu'au fil du temps, il s'avérera un pilier de l'enrichissement de l'éducation de tous les étudiants de premier cycle de la Faculté des sciences de la santé.

Je tiens à remercier du fond du cœur la rédactrice en chef de ce numéro, Robyn Winterbottom, dont le volume de travail équivaut parfois à un emploi à plein temps, ainsi que son impressionnante équipe éditoriale. Leur dévouement et leur passion pour cette initiative ont été pour moi une inspiration qui m'aide à demeurer humble.

Ce numéro a été subventionné en partie par le programme Mission Satisfaction de la Faculté des sciences de la santé de l'Université d'Ottawa. En outre, ce Journal ne pourrait pas exister sans la confiance constante des professeurs et de l'administration de l'Université, qui ont prodigué des conseils, et fourni des services de traduction, du mentorat étudiant et un excellent service de révision par les pairs.

Merci à tous,

Dr Raywat Deonandan
Professeur adjoint

École interdisciplinaire des sciences de la santé (ÉISS)
Faculté des sciences de la santé

Université d'Ottawa

Forward

Raywat DEONANDAN Executive Editor and Academic Supervisor

Increasingly, there is recognition that there is no true scholarship without the communication of insights and the sharing of observations. Indeed, for many, routine transparency is the hallmark of science. Hence, peer-reviewed journals, at whatever levels of impact, sophistication and reach, remain not only relevant, but essential for the maturation of both science and science students. To that end, I am proud that this journal is being sustained beyond its first issue as a solely student-run initiative. I believe that, in time, it will prove to be an essential element for the enriched education of all undergraduate health science students.

I wish to express my profound gratitude to this issue's Editor in Chief, Robyn Winterbottom, whose workload was, at times, equivalent to a full time job, and to her impressive editorial team. Their dedication and passion for this endeavour have been both inspiring and humbling.

Aspects of the current issue were funded in part by a Mission Satisfaction grant from the University of Ottawa's Faculty of Health Sciences. This journal could not exist without the sustained confidence of the University's faculty and administration, who have contributed through advice, translation, student mentorship, and by serving as valued peer reviewers.

Thank you all,

Dr Raywat Deonandan
Assistant Professor

Interdisciplinary School of Health Sciences
Faculty of Health Sciences

University of Ottawa

Ride Forward – An Evaluation of Cycling in Two Ottawa Neighborhoods

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Résumé :

(traduction)

Le cyclisme en plein air est une forme d'exercice à faible impact qui améliore le conditionnement physique cardio-vasculaire, la tonicité musculaire, l'amplitude des mouvements et la souplesse. Cette activité peut être bénéfique sur les plans physique et émotionnel, ainsi que pour la santé mentale et le bien-être. Ces avantages de santé mentale et de mieux-être peuvent découler du réseautage social dont bénéficient ceux qui font partie d'une collectivité cycliste.

Ce projet a pour objet de formuler des recommandations visant à améliorer la situation actuelle et future du cyclisme au Centre communautaire de Sandy Hill, dans les bassins hydrologiques de Old Ottawa East et de Sandy Hill, deux communautés d'Ottawa, en Ontario, au Canada. L'auteur a effectué une évaluation préliminaire des besoins, et formulé des recommandations découlant des informations recueillies. Pour amorcer cette évaluation, il a fallu recueillir de nombreuses informations, et notamment les avis et les attitudes des membres de la communauté vis-à-vis du cyclisme.

Suite à une analyse approfondie d'autres programmes offerts et de groupes existants actuellement à Ottawa, ainsi que dans d'autres villes comme Montréal, au Québec (Canada) ou Portland, en Oregon (États-Unis), l'auteur a conclu que les meilleures villes offraient à leurs habitants un large éventail de services publics de cyclisme correspondant à divers types de vie. Les connaissances générales provenant de l'analyse des programmes des autres villes ont permis à l'auteur d'élaborer un sondage visant à identifier les besoins spécifiques d'Ottawa, et plus particulièrement de la population cible des bassins hydrologiques de Sandy Hill et de Old Ottawa East.

Ces données ont alors été synthétisées pour élaborer une liste de recommandations et formuler des solutions aux problèmes actuels. Parmi ces recommandations découlant des données recueillies lors de l'évaluation des besoins, on trouve l'élaboration de divers programmes communautaires, comme un centre de ressources cyclistes, un système de jumelage de cyclistes, des groupes cyclistes, de l'éducation sur la sécurité à vélo, et une initiative de partage de bicyclettes. Ces données ont également indiqué que l'entretien régulier des routes et des pistes cyclables constituait un besoin prioritaire.

Mots-clés : Évaluation des besoins, cyclisme en plein air, santé communautaire

Abstract:

Outdoor cycling (bicycling) is a low-impact form of exercise that improves cardiovascular fitness, muscle tone, range of motion and flexibility. It is an activity that may be beneficial to one's physical, emotional, and mental health and well-being. The benefits to one's social and emotional health and wellness may be derived from the social networking associated with being a member of a cycling community.

The purpose of this project is to provide recommendations to improve the current and future state of cycling in the Sandy Hill Community Centre's catchment areas of Old Ottawa East and Sandy Hill, two communities in Ottawa, Ontario, Canada. A preliminary needs assessment was conducted, and recommendations were generated from the information gathered. In order to begin the needs assessment we required much information, such as the opinions and attitudes of community members regarding cycling.

Through the extensive research of other current programs and groups offered both in Ottawa and other cities such as Montreal, Quebec, Canada and Portland, Oregon, United States we have found that the best cities provide a wide-range of cycling utilities for its citizens to accommodate different lifestyles. From the general knowledge that we gained from the research of other cities we designed a survey to identify the specific needs of Ottawa, and more specifically our target population of Sandy Hill and Old Ottawa East catchments areas.

Information was then synthesized into a list of recommendations, as well as solutions to current problems. The recommendations generated from the data gathered from the needs assessment include the development of various community programs, such as a cycling resource centre, cycling buddy system, cycling groups, safe-cycling education, and a bike share initiative. The data gathered from the needs assessment also indicated a priority need for the regular maintenance of roads and bicycle lanes.

Keywords:

Needs assessment, outdoor cycling, community health

Introduction

Outdoor cycling is a low-impact form of exercise that, like other forms of aerobic exercise, improves cardiovascular fitness, and decreases one's risk of developing a myriad of health conditions, such as cardiovascular disease, diabetes, some cancers, and osteoporosis (Bredin, Nicol, & Warburton, 2006). This activity may be beneficial to one's physical, emotional, and mental health and well-being (Dahn & Penedo, 2005). Benefits to one's social health and wellness may also be derived from the social networking associated with being a member of a cycling community.

Cities with the largest proportion of cyclists often provide extensive programs to encourage city cycling. The Montreal's "Bixi" program allows locals to purchase a pre-paid membership card and use it to rent a Bixi bicycle at one of the many Bixi outlets around the city (BIXI, 2011). Portland, Oregon, a champion of urban cycling development has managed to increase their rates of urban cycling with very simple and inexpensive interventions, such as painting bicycle lanes bright blue (known as the 'blue box' to promote the perception of cycling safety (Dill, Handy, & Pucher, 2010). The blue box has increased both the perceived and observed level of safety in Portland, Oregon and had contributed to growth of city-wide cycling (Birk, Harkley, Hunter, & Stewart, 2000). Furthermore, several studies suggest that with increased cycling and walking, there is an inverse relationship to the number of cyclists hit by motorists, in varying community size, suggesting that motorists adjust their behavior to drive more cautiously when there are more cyclists and pedestrians present (Jacobsen, 2003). Clearly, the safety of cycling may often be quite different than the perception of said safety.

The communities of Old Ottawa East and Sandy Hill face many physical and social barriers that currently inhibit the development of prominent cycling programs. Despite many facilitating resources available, such as the Sandy Hill Community Health Centre (SHCHC), levels of cycling remain stable, but low, in this neighborhood. Although bike theft is a known issue in the two communities (the rate of theft $5000 and under is elevated when compared to neighboring communities) (Ottawa Police Service, 2008). The identity of many of the barriers that prevent the growth of cycling in Old Ottawa East and Sandy Hill are unknown. This needs assessment is designed to identify and provide recommendations for removing these barriers to better engage the communities of Old Ottawa East and Sandy Hill in city cycling. Communication with community members both in-person, and by way of local media (such as the Mainstreeter newspaper), is a major component of this Needs Assessment. Old Ottawa East and Sandy Hill were chosen because they are within the catchment area of the SHCHC and because of an existing partnership between the centre and University of Ottawa's HSS 4324 course coordinators.

Brief Description of Community Site and Target Population

The SHCHC has a vision to create a supportive environment for health and wellness and taking action for social equity through innovation, partnership and leadership (Sandy Hill Community Health Centre, 2011). They offer health services, social services, addiction and mental health services, health promotion and chronic disease management, and several seasonal programs. The SHCHC also invests in the development of local communities in an effort to promote the health and wellness of its client base; this Community Service Learning (CSL) project is being completed in conjunction with a SHCHC community developer. This project is based out of the Sandy Hill Community Health Centre at 88 Main St and takes place within the Old Ottawa East and Sandy Hill communities.

The target population of this CSL project includes the catchment areas of the SHCHC, Sandy Hill and Old Ottawa East that include secluded apartments, new residents to Ottawa and Canada and University students. New residents to the area have expressed specific concerns; however the opinions and attitudes of long-term community members are also valued because of their knowledge and expertise in the field of cycling.

Methods

Questionnaires (surveys) were used to gather preliminary data about cycling barriers and suggestions for cycling programs within the community. Common cycling barriers data were coded qualitatively using the emergent codes "bike lanes", "road safety", "rules and regulations", "cycling resources", and "vehicles/traffic". These data were analyzed using Microsoft Excel 2007 and presented at a focus group of key stakeholders within the community. This process allows the general community to provide suggestions for cycling resources, and relies on input from key stakeholders through the focus group.

A strong initial component of the needs assessment was networking with local stakeholders. Networking within the community allowed us to gather up-to-date information and provided a strong connection with key stakeholders.

The process of gathering data allowed us to simultaneously interact with more stakeholders and provide us with information regarding the needs of the community. The execution of our cycling project began with the creation and distribution of surveys throughout the Sandy Hill and Old Ottawa East communities. Surveys were created with the assistance of a community mentor and key informants within the community, where the need for an understanding of the perceived barriers to cycling emerged. The surveys were distributed at community events, such as community association meetings, and were collected on-site. Such locations included the Sandy Hill Community Health Centre, the Parent Resource Centre, local businesses (Cycos and Phat Moose Cycling), as well as the Ottawa East Community Association (OECA).

An online survey was also circulated primarily via the E-Mainstreeter, a local newspaper dedicated to reporting on current issues and events in the Old Ottawa East area.

An email address was included on both the surveys and in the Ottawa East community electronic newspaper, the E-mainstreeter. This provided an additional medium to address individual questions and concerns regarding our cycling initiative.

Once preliminary information was received from the surveys and emails, we analyzed the findings and extracted common concerns and interests. This information was then brought to a focus group, which allowed for an in-depth discussion and consultation towards building our cycling program. The focus group consisted of five individuals, where suggestions from the survey results analysis (including suggestions such as a cycling resource centre, cycling groups or buddy systems, road signs, and cycling safety programs) were discussed. Others suggestions emerged from the focus group in a manner that ensured a robust and effective program for all potential participants. Information was recorded during the focus group using a whiteboard to provide the participants with a visual indicator of their opinions, and also using Microsoft Word 2007. Time constraints did not allow us to go beyond the needs assessment phase; however, this needs assessment may set the foundation for future implementation of cycling plans in the area.

The methodology of the needs assessment was internally evaluated using a Goal Attainment Scale (GAS) for three items: the number of surveys completed, the number of e-mails received from community members, and focus group attendance. The GAS was chosen as a primary measure of internal achievement by the course coordinators at the University of Ottawa. The GAS allows program developers to set goals in 3-5 categories and to later evaluate these goals based on the original criteria. Within each of these 3-5 categories, 5 levels corresponding from -2 to +2 are given numeric values. This provides a benchmark for program developers to evaluate the quality of their research. The average of the numeric results from the 3-5 categories provides measure of achievement of objectives; where -2 is the lowest achievement and +2 s the highest.

The GAS ranking categories are as follows:

- –2 much less than expected goal attainment
- –1 less than expected goal attainment
- 0 complete goal attainment
- +1 more than expected goal attainment
- +2 much more than expected goal attainment

The five levels of the GAS for the first objective, the number of surveys completed, are as follows: -2=0, -1= 25, 0=50, +1=75 and +2=100. Our second objective, the number of e-mails received, is ranked as follows: -2=0, -1= 10, 0=20, +1=30, +2=40. Lastly, the scale for our final objective, focus group attendance, is as follows: -2=0, -1=4, 0=8, +1=12, +2=16.In this way, the GAS is used to evaluate the extent to which this project meets its' outlined achievements. There may be a potential for bias with the GAS; however, the GAS was used to evaluate the program planning methodology, not the response of the target population.

Results

Results from our surveys have indicated that of the 107 surveys received 32 respondents were non-cyclists (30%) and 75 were cyclists (70%) (Table 1). The respondents ranged in age from 17- 76 years and the majority of these respondents reside in the Old Ottawa East Community.

Our results indicate that the main barriers cyclists and non-cyclists experienced or considered were availability of resources, bicycle lanes, road safety, cars and rules/regulations of cycling. Most of the survey respondents who indicated that the coding theme of “resources” is a major barrier specified the type of resource that they were referring to; these include informational, educational, physical, and motivational resources. Some respondents did not provide their interpretation of the term ‘resources’, and these results were weighted less in the analysis.

The vast majority of non-cyclists who responded to the survey were concerned about the general informational resources available to them with respect to cycling, such as those resources that would provide information about the bylaws and regulations pertaining to cycling (87.5%). Our data indicates that a lack of resources is an important barrier not only to non-cyclists but to current cyclists as well; 39.3 % of current cyclists were also concerned about a lack of resources. Specific concerns from survey participants are represented graphically in Figure 1.

The respondents who indicated a lack of available resources as a major barrier are most interested in a resource centre to obtain basic information. Such basic information includes: purchasing locations of bikes and bike accessories, maps, safety clinics for cyclists as well as for drivers to allow children and adults to ride safely, a buddy system to help newcomers to Ottawa to learn to cycle while experiencing the neighborhood, and a bike share program for

Table 1 Survey results are separated into cyclists and non-cyclists with emphasis on major barriers to cycling

Barrier	Number (%)		Number of Non-Cyclist Responses (%)
Resources	42 (39.3%)	Non-cyclists	28 (87.5%)
Lanes	24 (22.4%)	Non-cyclists	1 (3.1%)
Road Safety	18 (16.8%)	Non-cyclists	1 (3.1%)
Cars	15 (14%)	Non-cyclists	1 (3.1%)
Rules/Bylaws	8 (7.5%)	Non-cyclists	1 (3.1%)

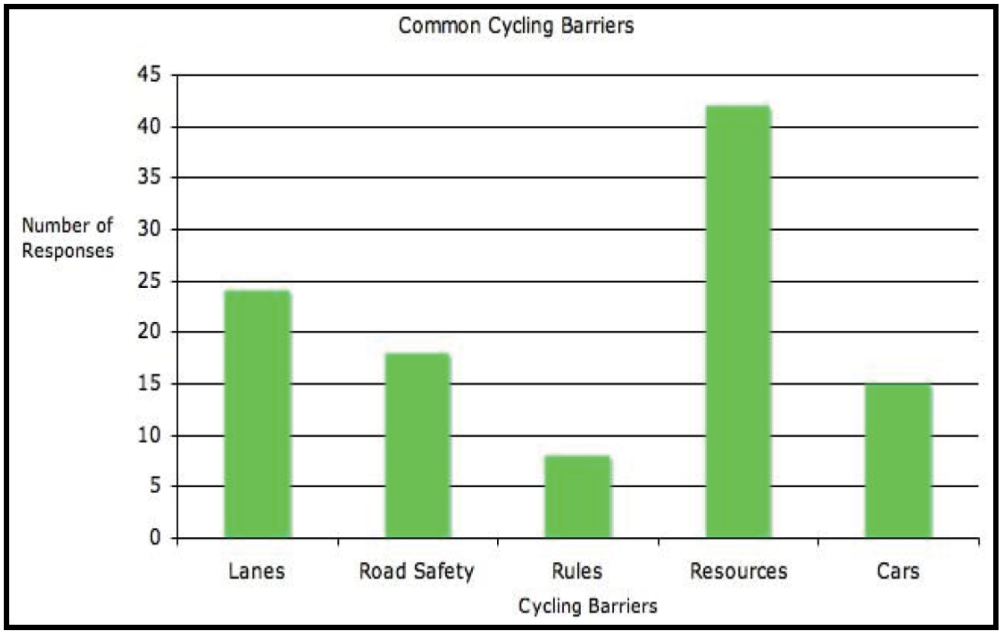

Figure 1 Graphical representation of community opinions from survey data regarding cycling barriers.

those who may not be able to afford, or have a place to store, bicycles.

After survey data were analyzed we narrowed our focus to three possible programs: a community-run resource centre, a new cyclist buddy system and a community-run cycling group. The proposed community initiatives are outlined graphically in Figure 2.

Results from our focus group indicate that a majority of participants are interested in improving current cycling facilities and promoting new cycling activities. Focus group participants emphasized safety as a primary concern within the community, and suggested that future resources be focused on improving the perception of safety within the community. Focus group attendees were receptive to most ideas, such as a cycling resource centre, cycling groups or buddy systems, and cycling safety programs; however, there was a unanimous disinterest in road signs. As such, road signs are not included the list of recommendations.

A goal attainment scale (GAS) was used to evaluate the desired outcomes of the project. GAS outcomes are as follow:

- We received a total of 104 surveys, which ranks us at +2 for this objective.
- We received a total of 31 e-mails from community members, which provides us with a +1 measurement on this objective.
- Five people attended the focus group, which gives us a rank of -1 on this objective.

Two of our objectives were reached according to our GAS outline. Our total GAS grade is 31.96, a positive grade overall. This indicates that the project did meet its objectives to a.

Recommendations

Based on information we have gathered and analyzed from surveys, interviews, and focus groups we have generated a list of recommendations to improve the current state and future of cycling in the Old Ottawa East and Sandy Hill communities. The recommendations below are listed in order of importance.

- **Cycling resource center** – A centre providing the latest cycling information, consultation for safety rules and concerns. Information about necessary accessories, maps.
- **Safety programs** – Educational resources for community members to learn how to cycle. Also, information regarding where to purchase and how to properly fit and wear safety gear.
- **Cycling groups** – A resource for current cyclists to network and organize themselves to cycle together in their respective neighborhoods.

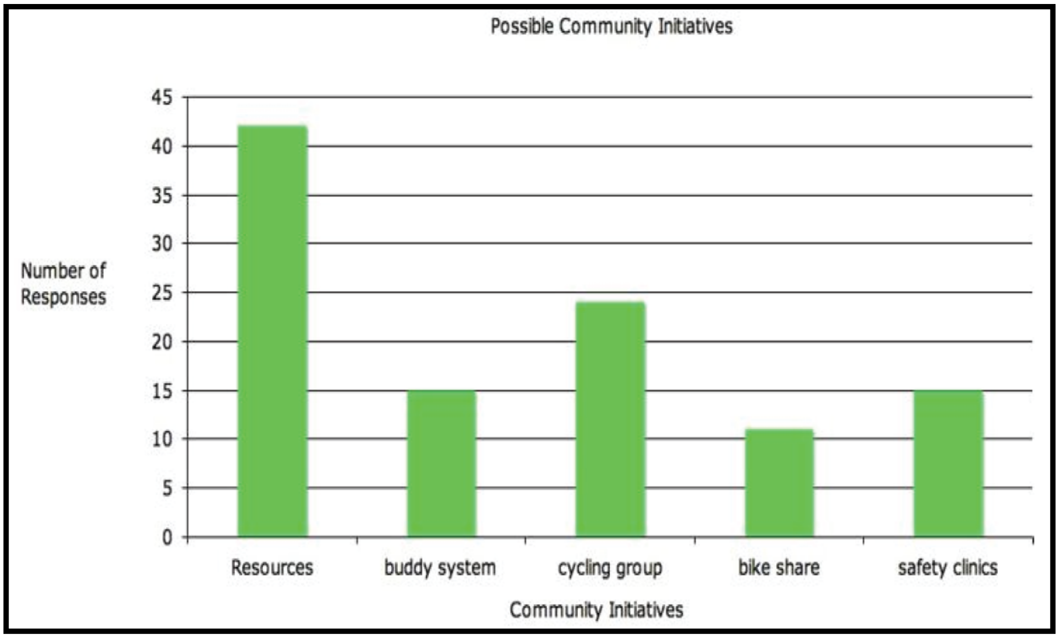

Figure 2 Support for possible community initiatives in Old Ottawa East and Sandy Hill.

- **Cycling buddy system** – A system where experienced cyclists pair up with inexperienced cyclists to provide guidance, support and knowledge about local cycling routes and lanes.

- **Road safety and conditions** – Provide a database to address concerns about road conditions, incomplete or insufficient bike lanes or routes, and other missing links in order to organize and prioritize the concerns of the public.

- **Bike share** – A program whereby cyclists or noncyclists alike who do not have access to a bicycle can rent a bicycle for a period of time.

Acknowledgments

Our project could not have been a success without the support and help of the following individuals. We would like to thank:

- Chris Osler-Our community mentor (Community Developer – SHCHC)
- Rebecca Aird (Chair of Sustainable Living Ottawa East-SLOE)
- Danny Albert (Sustainable Transportation Coordinator, University of Ottawa)
- John Dance (OECA footbridge committee head, SLOE member, year-round cyclist)
- Barry Davis (Old Ottawa East community member, year-round cyclist)
- Mr. Paul Dewar (MP – Ottawa Centre)
- Mr. Clive Doucet (City of Ottawa Councillor, Capital Ward)
- Pierre Johnson (Senior Assistant Office of City Councilor Clive Doucet)
- Nick Masciantonio (President- OECA)
- Carol Workun (Director of CAG – OECA)

We would also like to thank our course instructors, whose guidance was essential for the success of this project.

- Wilma Jelley
- Gail Bowes
- Kristine Houde
- Chantal vonSchoenberg

Thank you to the Old Ottawa East and Sandy Hill community members, who provided their feedback, ideas, observations and participation in our surveys and focus group. This project would not have been a success if not for the avid support of both communities.

Finally, organizations such as Cycling Vision, Citizens for Safe cycling, City of Ottawa Cycling Plan, and Cycling Summit, helped to contribute to our knowledge of cycling.

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Quelle est la Part des Régimes Publics d'Assurance-Médicament aux Résultats de Sante? Une Étude de Cas Multiples au Nouveau-Brunswick, en Ontario, et au Québec.

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Résumé :

(traduction)

Les régimes provinciaux et territoriaux d'assurance-médicaments au Canada varient considérablement quant aux critères d'admissibilité, et la plupart des assurances offertes sont assujetties à des plafonds, à un partage des coûts, ou à des exclusions. De fait, il existe une inégalité d'accès aux médicaments sur ordonnance pour les Canadiens, selon leur statut socio-économique et leur lieu de résidence. Ceci intervient dans un contexte où les effets du vieillissement de la population, le nombre croissant de personnes atteintes de maladies chroniques multiples, et les innovations réalisées dans le secteur des médicaments d'ordonnance ont entraîné une hausse de dépenses pour ces produits. La question soulevée par cette étude est la suivante : une province avec un meilleur régime d'assurance-médicaments dispose-t-elle d'une population en meilleure santé ?

Cette étude a donc comparé les protections offertes par les régimes publics d'assurance médicaments de trois provinces (le Nouveau-Brunswick, l'Ontario et le Québec) chez les 65 ans et plus. Les résultats de notre étude suggèrent que l'état de santé des aînés ne semble pas aller en s'améliorant. Il est donc impératif que des recherches additionnelles soient effectuées afin de déterminer l'impact véritable des régimes d'assurance-médicaments sur les résultats de santé. Cela permettrait de tailler des programmes sur mesure et des politiques et mieux ciblées afin de satisfaire plus adéquatement les besoins des collectivités.

Mots-clés : Assurance médicament, province, résultats de santé, vieillissement

Abstract:

Canadian provincial and territorial drug plans vary considerably in terms of eligibility criteria, and most of the insurance plans provided are subject to caps, cost sharing and exclusions. In fact, Canadians have unequal access to prescription medications, depending on their socio-economic status and place of residence. This comes at time then the effects of population aging, an increasing number of people with multiple chronic illnesses and innovations in the prescription medications field have brought about an increase in spending on these products. The question raised by this study is does a province with a better prescription drug plan have a healthier population?

This study compared coverage of prescription drug plans among people 65 years old and over in three provinces: New Brunswick, Ontario and Quebec. The results of our study suggest that senior citizen health does not seem to improve. Therefore, it is imperative that additional research be conducted to determine the true impact of prescription drug plans on health outcomes. This would allow for the creation of tailor-made, better-targeted programs and policies to meet community needs more adequately.

Keywords: Drug insurance plan, province, health outcomes, aging

Introduction

Le système de santé canadien est souvent cité en exemple au niveau mondial en raison notamment de son efficacité. Pourtant, en dépit cette bonne image, l'inégalité des populations face aux soins est bien présente au Canada, et ne cesse de s'aggraver (Romanow, 2002). L'un des champs de la santé qui suscite le plus d'inquiétudes est, sans contredit, celui des dépenses en médicaments. Ces derniers jouent un rôle essentiel dans la médecine moderne et, parce qu'ils traitent diverses maladies, ils sont devenus un élément important du système de santé canadien. Les divers niveaux de gouvernement (fédéral, provinciaux et territoriaux) se sont dotés d'une politique du médicament destinée à répondre aux besoins de populations par l'entremise de régimes d'assurance-médicaments (Imbeau, Chenard, & Dudas, 2002; Paris & Docteur, 2006). La plupart ont mis un accent particulier sur les médicaments d'ordonnance[1] dont les coûts grèvent considérablement les dépenses des régimes d'assurance en place. En général, plus le régime d'assurance est accessible et généreux, moins les médicaments sont coûteux pour le consommateur, et plus les gens sont susceptibles d'en consommer. Outre les nouveaux médicaments qui sont susceptibles d'être plus sécuritaires et de causer moins d'effets secondaires que les médicaments existants, certaines pratiques de l'industrie pharmaceutique auprès des prescripteurs (médecins, dentistes, etc.) et des pharmaciens ont pour effet d'augmenter le coût des médicaments (Demers, 2008; Institut canadien d'information sur la santé (ICIS), 2010; Morgan, 2004).

En effet, depuis près de deux décennies, le coût des médicaments d'ordonnance au Canada a augmenté de 10% en moyenne par année. En effet, les médicaments représentent un facteur important de l'augmentation du coût des soins de santé. Mais c'est véritablement l'utilisation de médicaments pour le traitement de maladies chroniques qui a contribué à la hausse des dépenses en médicaments sur ordonnance au Canada. Ils ont affiché des taux d'augmentation supérieurs à 12 % depuis le début des années 2000. En dépit du fait que plusieurs de ces médicaments ont perdu la protection de leur brevet et ont été remplacés par des médicaments génériques à prix plus modique, il faut souligner que les tendances en matière de dépenses en médicament suggèrent que ceux-ci coûtent toujours aussi cher, en raison notamment de la plus forte augmentation de la consommation de médicaments par habitant, de l'adoption plus lente des nouveaux médicaments génériques et du plus grand recours aux médicaments spécialisés. En 2009, par exemple, les dépenses consacrées aux médicaments d'ordonnance étaient d'environ 25,4 milliards $ au Canada, et représentaient la deuxième part en importance parmi les principales catégories de dépenses de santé, après les hôpitaux (ICIS, 2010). Les gouvernements sont aujourd'hui préoccupés par l'accessibilité et la durabilité du système de santé, mais se doivent en même temps d'en minimiser les répercussions négatives sur les populations.

Actuellement, près des deux tiers des personnes âgées de 65 ans et plus consomment au moins cinq types de médicaments prescrits au Canada, et puisque la prévalence de nombreuses maladies chroniques augmente avec l'âge, cela contribue à l'augmentation du nombre de médicaments utilisés par ces personnes. On estime au Canada que près de 25% des personnes âgées entre 60 et 70 ans usaient d'une polymédication, c'est-à-dire qu'elles consomment au moins cinq médicaments différents afin de traiter leurs maladies (Coombes, Morgan, Barer, & Pagliccia, 2004; Tambay & Catlin, 1995; Willcox, Himmelstein, & Woolhandler, 1994). La hausse croissante des dépenses consacrées aux médicaments perpétue aussi la situation de milliers de Canadiens qui sont sans assurance-médicaments, ou qui ont des protections insuffisantes qui ne leur permettent pas de faire face aux dépenses de médicaments. Fraser et Shillington (2005) estiment à 11 % la population totale de cette couche.

Si tout indique aujourd'hui que la cohabitation de plusieurs régimes d'assurance-médicaments n'est pas problématique au Canada, Kapur et Basu (2005) évoquent le risque d'une démultiplication des sous-assurés[2], renforçant ainsi le caractère inégalitaire du système, ce qui rappelle l'époque où l'assurance-maladie n'existait pas : les gens qui ont assez d'argent peuvent se payer leurs médicaments, les autres s'en passent. À cela s'ajoutent les cas des provinces où la couverture universelle d'assurance-médicaments d'ordonnance n'existe pas (Île-du-Prince-Édouard, Nouveau-Brunswick et Yukon). Le taux de sous-assurés est croissant, en particulier chez certaines couches vulnérables de la population[3], les inégalités interrégionales sont considérables dans la couverture des médicaments d'ordonnance, et les niveaux de prise en charge varient nettement d'une province à l'autre.

Objectif de l'étude

Notre recherche vise à déterminer, à travers une étude de cas multiples dans trois provinces canadiennes, la part véritable des régimes d'assurance médicament dans les résultats de santé et le bien-être des populations. Il s'agit dans les faits d'examiner si, et jusqu'à quel point, les différences en matière de politique d'une province à l'autre expliqueraient les divergences observables et mesurables en matière de santé et de bien-être.

Méthodologie

La méthode choisie est l'étude comparative de cas multiples. Yin (1994) recommande aussi les études de cas dans des domaines à faible maturité, où le chercheur doit utiliser de multiples sources d'information comme évidence pour expliquer et comprendre un phénomène. Notre démarche incluait une revue de la littérature, l'examen de documents administratifs et l'analyse de données statistiques. Plus spécifiquement, nous avons comparé les spécificités des régimes publics d'assurance-médicaments de trois provinces canadiennes (Nouveau-Brunswick, Ontario, et Québec) au chapitre de la couverture des groupes bénéficiaires, des franchises, des cotisations, etc., pour déterminer la part véritable des régimes d'assurance-médicaments dans les résultats de santé et le bien-être des populations. Le choix de ces trois provinces s'explique par des raisons pratiques qui tiennent essentiellement à la disponibilité des données. L'analyse que nous avons menée nous permet de faire les constatations que nous décrivons dans les lignes qui suivent.

Constatations

La nature des programmes

L'Ontario propose une couverture en quatre points, soit le Programme de médicaments de l'Ontario (PMO), le Programme de médicaments Trillium, le Programme de médicaments spéciaux et le Programme de financement des nouveaux médicaments contre le cancer. Quant au Nouveau-Brunswick, il a séparé sa couverture en dix catégories : les personnes âgées, les patients atteints de fibrose kystique, les personnes résidant dans un établissement résidentiel autorisé pour adultes, ceux bénéficiant de l'aide sociale, les enfants de ces derniers, les patients atteints de sclérose en plaques, les receveurs d'une greffe d'organe, les personnes avec une déficience d'hormones de croissance, les personnes atteintes du VIH/sida, et finalement les personnes résidant dans un centre de soins infirmiers. Pour sa part, le Québec assure une couverture publique via la Régie de l'Assurance Maladie du Québec (RAMQ).

Groupes bénéficiaires

Il apparaît que les provinces n'accordent pas la même protection à tous les bénéficiaires. Le PMO s'adresse aux Ontariens de 65 ans et plus, aux résidents des centres de soins longue durée, aux personnes recevant des services professionnels à domicile, ou de l'aide sociale, et aussi aux bénéficiaires du Programme de médicaments Trillium. Ce dernier programme est en place pour répondre aux besoins des citoyens ontariens qui paient des frais de médicaments élevés par rapport au revenu de leur ménage. Au Nouveau-Brunswick, la protection est divisée en dix plans, chacun couvrant une maladie spécifique. Les citoyens du Nouveau-Brunswick qui n'entrent pas dans ces catégories doivent avoir recours à une assurance privée. Au Québec, le régime public d'assurance médicaments est obligatoire pour tous ceux qui ne sont pas admissibles à un régime privé. Le régime s'adresse donc aux adultes de 18 à 64 qui n'ont pas accès à un régime privé, par eux-mêmes ou via leur conjoint, aux gens bénéficiant de l'aide sociale, aux enfants de personnes assurées par ce régime, sauf ceux qui peuvent avoir accès par eux-mêmes à un régime privé. Finalement, à 65 ans, une personne devient automatiquement inscrite au régime public, à moins de démontrer qu'elle est toujours admissible à un régime privé de couverture équivalente.

Les maladies

L'Ontario, avec son Programme de médicaments spéciaux, couvre des médicaments précis pour le traitement de maladies spécifiques (ex. fibrose kystique, VIH, etc.). Le Nouveau-Brunswick inclut dans ses divers plans une couverture similaire à l'Ontario, en sélectionnant des maladies spécifiques énoncées ci-haut pour l'admissibilité au régime. Au Québec, aucune maladie particulière n'est ciblée par le régime d'assurance-médicaments. Il couvre les médicaments délivrés sur ordonnance au Québec qui apparaissent dans la Liste des médicaments publiée par la RAMQ. Cependant, certains médicaments peuvent être remboursés de façon exceptionnelle.

Tableau 1

Caractéristiques des protections offertes aux personnes âgées de 65 ans et plus

Caractéristiques	*Ontario*	*Nouveau-Brunswick*	*Québec*
Programme	Personnes âgées de 65 ans et plus	Personnes âgées bénéficiant du SRG et personnes âgées de 65 ans et plus Célibataire ayant un revenu de 17 198 $ ou moins Couples dont les deux conjoints ont 65 ans et plus et revenu annuel combiné de 26 955$ ou moins Couples dont un des conjoints a moins de 65 ans et revenu annuel combiné de 32 390$ et moins.	Obligatoire rendu à 65 ans, à moins de démontrer la preuve d'une conservation d'une assurance privée de couverture équivalente au régime public
Franchise	100 $ pour - Les personnes âgées célibataires avec revenu annuel de 16 018$ ou plus - Les couples âgés avec revenu annuel combiné de	Aucune	- Sans SRG : 16$/mois + coassurance de 32% - SRG 1-93% : 16$/mois + coassurance de 32% - SRG 94-100% : 0$ + coassurance 0%
Cotisation	Aucune 65 ans et plus avec revenu 16 018$(seul) ou 24 175 $ (couple) et plus par année : 6,11$/ordonnance 65 ans et plus avec revenu 16 018$ (seul) ou 24 175 $(couple) et moins par année : 2$/ordonnance	Aucune SRG : 9,05$/ordonnance Sans SRG : 15$/ordonnance	- SRG 94-100% : aucune - Autres : 0-600$ par adulte, en fonction du revenu

Source : Programme de médicaments de l'Ontario : http://www.health.gov.on.ca/french/publicf/programf/drugsf/drugs_mnf.html,
Plan de médicaments d'ordonnance du Nouveau-Brunswick : http://www.gnb.ca/0051/0212/index-f.asp,
RAMQ au Québec : http://www.ramq.gouv.qc.ca/fr/citoyens/assurancemedicaments/index.shtml

Tableau 2

Espérance de vie en bonne santé à 65 ans.

Espérance de vie en bonne santé à 65 ans. 2001		
Province	**Hommes**	**Femmes**
Québec	12,8	14,8
Ontario	12,7	13,9
Nouveau-Brunswick	12,6	14,6

Source : Statistique Canada. Tableau 102-0121 : Espérance de vie en fonction de la santé, à la naissance et à 65 ans, selon le sexe et le groupe de revenu, Canada et provinces, occasionnel (années), CANSIM (base de données). http://cansim2.statcan.gc.ca/cgi-win/cnsmcgi.exe?Lang=F&CNSM-Fi=CII/CII_1-fra.htm

Tableau 3

Prévalence des maladies chroniques sélectionnées chez les personnes âgées de 65 ans et plus

Prévalence des maladies chroniques sélectionnées chez les personnes de 65 ans et plus, 2005*

Province	Aucune maladie chronique sélectionnée	1 maladie chronique sélectionnée	2 maladies chroniques sélectionnées ou plus
Québec	26 %	35 %	39 %
Ontario	21 %	36 %	43 %
Nouveau-Brunswick	20 %	33 %	47 %

* Les maladies chroniques sélectionnées comprennent les maladies suivantes : arthrite, cancer, maladie pulmonaire obstructive chronique, diabète, maladie du cœur, hypertension et troubles de l'humeur.

Source : Conseil canadien sur la santé (2007). Schémas de population – Maladies chroniques au Canada : Supplément de données, Importance du renouvellement des soins de santé : À l'écoute des Canadiens atteints de maladies chroniques. ISBN 978-1-897463-13-0.

Tableau 4

Prévalence du diabète chez les 65 ans et plus

Prévalence du diabète 1994 à 2005 chez les 65 ans et plus (%)

Année	Québec	Ontario	Nouveau-Brunswick
1994	10,5	12,7	7,6
1996	11,1	9,9	9,5
1998	11,7	12,0	10,6
2000	13,0	12,7	14,3
2003	13,6	13,7	15,0
2005	16,2	14,7	14,2

Source : Agence de la santé publique du Canada. Infobase des maladies chroniques. Division de la surveillance, CPCMC, ASPC. http://204.187.39.30/surveillance/index.aspx?L=fra

Tableau 5

Prévalence de l'hypertension diagnostiquée chez les 65 ans et plus

Prévalence du diabète 1994 à 2005 chez les 65 ans et plus (%)

Année	Québec	Ontario	Nouveau-Brunswick
1994	29,9	28,4	25,1
1996	32,9	33,2	29,1
1998	37,2	38,6	37,2
2000	38,2	39,8	39,5
2003	41,8	43,5	42,5
2005	42,8	45,0	48,5

Source : Agence de la santé publique du Canada. Infobase des maladies chroniques. Division de la surveillance, CPCMC, ASPC. http://204.187.39.30/surveillance/index.aspx?L=fra

Cotisations

En ce qui a trait aux cotisations, c'est-à-dire le montant qu'un bénéficiaire doit payer pour s'inscrire à un régime, on observe des variations importantes d'une province à l'autre. L'Ontario n'exige aucune cotisation pour l'adhésion à son Programme de médicaments. Le Nouveau-Brunswick demande des frais d'inscription de 50$ par année pour certains plans. Le Québec perçoit une prime dont le montant annuel varie de 0$ à 600$ par adulte selon le revenu familial net. Certaines personnes sont, par contre, exemptées du paiement de la prime, dont les personnes de 65 ans et plus recevant le Supplément de Revenu Garanti (SRG) au taux de 94 à 100%.

Franchise

La franchise est le montant des dépenses totales en médicament qu'un bénéficiaire doit débourser dans une période donnée avant qu'une partie de ses dépenses en médicament ne soit couverte par le programme ou le régime d'assurance médicaments. Elle varie elle aussi en importance en fonction du régime auquel on souscrit et la catégorie de bénéficiaire dont on fait partie. Le PMO de l'Ontario exige une franchise de 100$ pour les personnes âgées ayant un faible revenu. Les personnes admissibles au Programme de médicaments Trillium doivent verser une franchise, chaque trimestre ou au prorata de leur revenu. Aucune franchise n'est exigée par contre pour les autres personnes admissibles au Programme de médicaments de l'Ontario (PMO). Une fois leur franchise payée, les personnes âgées à faible revenu paient des honoraires de pharmacie pouvant atteindre 6,11$ chaque fois qu'elles font exécuter une ordonnance de médicaments. Toutes les autres personnes admissibles au PMO peuvent avoir à payer 2$ chaque fois qu'elles font exécuter une ordonnance. Le Nouveau-Brunswick n'exige aucune franchise, peu importe le plan. Les frais d'ordonnance sont de l'ordre de 9,05$ par ordonnance pour les personnes âgées à faible revenu percevant un SRG et de 15$ par ordonnance pour ceux qui n'en perçoivent pas. Les personnes bénéficiant de l'aide sociale paient des frais de 4$ par ordonnance. Dans la province du Québec, la Régie de l'assurance maladie demande une franchise mensuelle de 16$ pour les adultes de 18 à 64 ans non admissibles à un régime privé, pour les personnes de 65 ans et plus sans supplément de revenu garanti (SRG) ou ceux avec un SRG au taux de 1% à 93%. Les gens bénéficiant de l'aide sociale, les personnes âgées de 65 ans et plus avec SRG au taux de 94% à 100% n'ont pas à payer de franchise. Une fois que la franchise réclamée est payée, la personne assume seulement un pourcentage des médicaments couverts (coassurance). Cette coassurance est au taux de 32 % pour ceux ayant payé une franchise et de 0% pour les autres.

Résultats et analyse

En matière d'assurance médicaments, on peut sans risque de se tromper parler d'une spécificité canadienne. Contrairement à plusieurs pays industrialisés, le Canada n'a pas de régime universel destiné à couvrir les médicaments délivrés sur ordonnance. La cohabitation de dix-neuf régimes publics d'assurance-médicaments auxquels s'ajoutent des milliers de régimes privés s'explique en partie par les partages de compétence en matière de santé et les contraintes induites par la Loi canadienne sur la santé. Les variations dans les régimes provinciaux et territoriaux en matière d'admissibilité, de bénéficiaires, de structures de versement, etc. engendrent des inégalités de santé. D'ailleurs, de plus en plus d'évidences suggèrent que l'accroissement des dépenses en médicaments qui sont à la charge des personnes sous-assurées ou sans assurance a une incidence négative sur les résultats de santé (Robyn, 2001).

L'exercice que nous effectuons ici est particulièrement intéressant car il nous permettrait de déterminer l'incidence des régimes d'assurance médicaments sur les résultats de santé. Autrement dit, une province avec un meilleur régime d'assurance-médicaments dispose-t-elle d'une population en meilleure santé ? Les données relatives aux impacts des programmes et politiques sur les résultats en matière de santé sont précieuses, car elles permettent de mesurer les bienfaits des interventions publiques et de faire des choix informés quant à l'établissement de priorités et à l'allocation des ressources. D'autre part, la consommation de médicaments est très répandue chez les aînés. Ceux-ci consomment, en effet, jusqu'à 40% de tous les médicaments prescrits au Canada (ICIS, 2010), et il est crucial de déterminer si l'accès ou non à un régime d'assurance-médicaments, la nature de la couverture, et la structure financière de ce régime ont des incidences sur les résultats de santé. Avant de répondre à cette question, nous présentons ci-dessous les résultats de notre analyse comparative des régimes d'assurance-médicaments des trois provinces.

L'examen du tableau ci-haut nous permet d'avancer une première constatation. Pour la strate de personnes âgées la plus pauvre, le Québec représente la meilleure alternative, car elles ont droit à la gratuité des médicaments. Ensuite, l’Ontario vient en deuxième, avec des frais de 2$ par ordonnance. Pour sa part, le Nouveau-Brunswick arrive dernier, en exigeant des frais de 9,05$ par ordonnance. Les personnes âgées de 65 ans et plus ayant un bon revenu (sans SRG) paient 100$ par année et 6,11$ pour chaque ordonnance en Ontario. Le Nouveau-Brunswick ne leur offre aucune couverture publique. Ces personnes peuvent, par contre, se doter d’une assurance en adhérant au Programme de médicaments sur ordonnance pour les aînés de Croix Bleue Medavie, moyennant des frais mensuels de 105 $. Le Québec oblige ses résidents âgés de 65 ans et plus à s’inscrire au régime, et ils paient une cotisation allant de 0 à 600$, en fonction du revenu, en plus d’une franchise de 16$ par mois et d’une coassurance de 32% sur leurs achats en médicaments. On peut donc déduire pour ce groupe que le régime de l’Ontario est celui qui leur est le plus favorable, économiquement parlant.

Compte tenu que le régime d’assurance-médicaments du Québec est celui qui fonctionne plus avec la capacité de payer, et non en fonction des besoins, pour calculer les coûts des médicaments, on peut donc conclure que ce régime est le plus bénéfique aux personnes âgées. Effectivement, le régime québécois n’impose pas de prix fixes pour les médicaments, et tout est échelonné en fonction du revenu. Le Québec, en imposant une assurance publique basée sur le revenu aux personnes âgées de plus de 65 ans, leur offre la possibilité de contourner les frais onéreux du secteur privé, ce dernier ne tenant pas compte des besoins des patients, mais plutôt de leur capacité de payer.

Afin de répondre à notre question initiale, c’est-à-dire celle de savoir si une meilleure accessibilité aux médicaments se traduit en impacts concrets sur la santé, nous avons compilé un certain nombre de statistiques qui présentent un portrait global de l’état de santé des personnes âgées de 65 ans et plus à l’échelle des trois provinces.

Le tableau 2 révèle que le Québec obtient de meilleurs résultats, autant du côté des hommes que des femmes, pour ce qui est de l’espérance de vie en bonne santé. Les différences chez les hommes sont moins marquées que chez les femmes, où on observe une variation de 0,9 ans entre le Québec et l’Ontario. Quant au tableau 3, il est révélateur. En effet, les maladies chroniques peuvent être traitées, si elles sont prises en main tôt dans leur évolution, ou contrôlées par une médication appropriée. Des variations interprovinciales sont donc un indicateur plutôt probant des inégalités au niveau de l’accès aux médicaments. Le Québec se retrouve en meilleure position, car il a le plus grand pourcentage de personnes ne présentant aucune maladie chronique sélectionnée, et le plus faible pourcentage de personnes présentant deux maladies chroniques sélectionnées. Les données présentées au tableau 4 portent à réflexion. Effectivement, peu importe la province observée, on constate une augmentation au cours des années du taux de prévalence du diabète. Est-ce que cela veut dire que la maladie est mieux diagnostiquée qu’avant ou que, vraiment, il y a une augmentation des cas dans la population âgée ? Probablement que le dépistage précoce contribue à augmenter la prévalence, mais on est porté à croire qu’il y a réellement une augmentation des cas de diabète dans la population. On pourrait peut-être y voir un lien avec le taux d’obésité croissant. De plus amples recherches sur le sujet pourraient nous en apprendre davantage. Le Québec fait ici mauvaise figure, en obtenant une prévalence de presque 2% supérieure au Nouveau-Brunswick, qui s’est établie au fil des années. Le Québec se démarque au tableau 5, en affichant les taux les plus bas d’hypertension artérielle en 2005.

Cela dit, il faut souligner que notre étude comporte des limites méthodologiques. En effet, les données obtenues sont incomplètes, et ne couvraient pas toutes une période assez longue pour permettre de tirer des conclusions rigoureuses. Les statistiques sur les 65 ans et plus dans les trois provinces sont rares, ce qui rend difficile une comparaison étoffée. En outre, les variables sélectionnées peuvent être sujettes à de multiples interprétations. Par exemple, les données sur l’hypertension diagnostiquée ne permettent pas de conclure que les chiffres sont tels quels parce qu’il y a plus de personnes malades, ou parce qu’il y en a tout simplement qui vont se faire diagnostiquer en raison d’un plus haut niveau de littératie en santé.

Conclusion

La conclusion générale qui se dégage de cette étude préliminaire, c’est que l’état de santé de la population des 65 ans et plus ne semble pas aller en s’améliorant. Les rares données longitudinales observées suggèrent que les choses vont de mal en pis. Les taux de prévalence du diabète, par exemple, sont croissants, peu importe la province étudiée. Il est donc impératif que des recherches additionnelles au niveau des services offerts aux citoyens soient effectuées afin de déterminer l’impact véritable des régimes d’assurance-médicaments sur les résultats de santé pour les Canadiens. Ceci permettrait de tailler des programmes et des politiques sur mesure et mieux ciblées afin de mieux satisfaire aux besoins des collectivités. Cependant, il serait bien de mesurer si un investissement dans un tel secteur amène vraiment des améliorations significatives sur la santé des populations. Les gouvernements sont-ils prêts à de telles initiatives et d'éventuelles réformes, qui engendreraient des coûts inévitables? L'exemple du Québec semble effectivement indiquer qu'un régime adapté mène à l'obtention de meilleurs résultats en matière de santé, et qu'une restructuration des régimes en vigueur pourrait être bénéfique pour l'état de santé des personnes âgées de 65 ans et plus. Cette province obtient, selon les données récoltées, des résultats en matière de santé supérieurs au Nouveau-Brunswick et à l'Ontario. L'étude effectuée ici permet donc d'établir un lien, certes ténu, mais important, entre l'assurance-médicaments et les résultats de santé. La durabilité de ce lien reste cependant à être définie.

Notes

[1] Ces médicaments sont supposés avoir des niveaux de risque significatifs, ce qui explique leur plus grand contrôle.

[2] Ces auteurs qualifient de sous-assurées des personnes qui ne bénéficient pas d'un plafond protecteur contre les coûts des médicaments d'ordonnance.

[3] Comme nous l'avons précisé antérieurement, il s'agit des jeunes (18-34 ans), des personnes à faible revenu ou à revenu moyen, ou des personnes travaillant à temps partiel.

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The Disability Experience: Living with a Birth Defect Resulting from Thalidomide Exposure

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Résumé :

(traduction)

La Thalidomide est un exemple classique du potentiel que la médecine a de nous nuire. En effet, la diffusion de masse de ce médicament à la fin des années 1950 a causé la naissance de huit à dix mille enfants présentant un handicap congénital. Cette tragédie affecte encore aujourd'hui la vie d'environ 125 personnes au Canada. Comment ces personnes vivent-elles, et quel a été l'impact global de leur handicap? L'article décrit l'expérience de vie d'une femme née avec une phocomélie des membres supérieurs causée par la Thalidomide. L'auteur a effectué une entrevue directe non structurée d'une heure avec cette femme, et elle lui a permis d'utiliser l'enregistrement pour pouvoir analyser les données plus en détails. Il y a découvert six thèmes principaux indiquant qu'un handicap physique causé par la Thalidomide peut n'avoir qu'un impact minimal sur la qualité de vie globale du sujet, à condition que celui-ci bénéficie d'un soutien adéquat et ait une image positive de lui. Le contenu de l'entrevue indique que vivre avec un handicap constitue une expérience unique pouvant avoir des conséquences positives. À la fin de cet article, l'auteur conclut qu'il est nécessaire de mener davantage de recherches approfondies afin de mieux faire valoir le point de vue des personnes handicapées.

Mots-clés : Thalidomide, handicap, expérience de handicap, handicap précoce

Abstract:

The drug, Thalidomide, is a classic example of how medicine has the potential to cause us harm. The market flooding of this drug in the 1950's resulted in the birth of 8 to 10 thousand children with birth defects. Today in Canada this tragedy still affects the lives of approximately 125 individuals. How do these individuals live their lives and what has been the overall impact of their impairment? This article explores the lived experience of a woman born with upper limb phocomelia as a result of Thalidomide exposure. A one-hour unstructured face-to-face interview was conducted. Permission was received from the interviewee to make a voice recording of the interview allowing for a more concrete data review. The interview uncovered 6 primary themes indicating that a physical impairment resulting from thalidomide can have a minimal impact on an individual's overall quality of life, as long as sufficient support and a positive self identity is present. The interviewee's accounts suggest that living with disability is a unique experience that can lead to positive outcomes. The ultimate conclusion of this paper is that more extensive research is needed to further represent the voices of the disability community.

Keywords: Thalidomide, disability, disability experience, early onset disability

Introduction

In the late 1950s, an unfortunate lesson was learned in the field of medicine. Insufficient testing allowed a drug with unknown devastating side effects to reach the market. The story behind Thalidomide is one of short duration but of significant impact on humanity. It will be a constant reminder that medicine has the potential to harm us (Duffin, 1999). Thalidomide was synthesized in 1954 and was regarded as a highly effective sedative used to treat morning sickness. By 1957, this drug was rapidly marketed in over 20 different countries (Lenz, 1992). It is only in November of 1961 that observations of several birth defects lead to the partial withdrawal of the drug across the world. Canada continued to sell Thalidomide until March of 1962 (Lenz, 1992). By this time, at least 8 000 to 10 000 infants were born in Canada and Europe with missing digits, arms, legs and deformities of internal organs. Today there remain only 5 000 survivors (Annas & Elias, 1999; Vanchieri, 1997). In Canada, this tragedy still affects the lives of approximately 125 individuals (Duffin, 1999).

It is hard to describe the precise effects of Thalidomide, because it is known to cause a wide variety of birth defects. However, the majority of Thalidomide cases result in bilateral limb defects such as upper limb amelia, missing fingers, lower limb defects and club foot (Smithells & Newman, 1992). Additional common afflictions are developmental abnormalities of the ears and eyes, abnormal innervation of facial muscles and cleft palate. Further observable conditions include internal abnormalities that affect the heart, kidneys, urinary tract, alimentary tract and the genital tract (Smithells & Newman, 1992).

There is very little documentation concerning the survivors' childhood experiences of living with physical disabilities resulting from this tragedy. However, one 1964 study examined Thalidomide children's overall social, physical and cognitive adjustment. The findings indicate that these children possess a normal distribution of intelligence, the ability to develop and master motor activities, no major emotional disorders and no distortion in body image (Gingras et al., 1964). In an attempt to evaluate adult survivors' current social, physical and cognitive adjustment two new studies were published in 2007 and 2011. These studies each found that with age the majority of participants living with birth defects did experience a deterioration of their disability, which resulted in increased pain and fatigue. However, most respondents despite their poor health status reported good health or quality of life (Bent, Chamberlain, Neumann, & Tennant, 2007; O'Carroll, O'Reilly, & Whitford, 2011). Thus it seems there is a positive outlook for Thalidomide survivors during all stages of life.

A face to face unstructured interview was conducted to uncover one woman's experience of living with birth defects caused by Thalidomide exposure. The author's goal in this report is to analyse this woman's life experiences from childhood to motherhood. For confidentiality purposes, the interviewee will be known simply as "Ruth". Overall this interview was conducted with the hopes of better understanding her experience of disability along with a more general understanding of the disability experience.

Methods

In order to get a glimpse of who the interviewee is, a detailed demographic description follows. The interviewee is a married 48 year old female and is a mother of two. She is currently employed by in the child care services industry as an assistant director for a before and after school program. She was an only child, and attained a college level education. She is categorised as having an early-onset disability, which means she has had her disability since a very young age. This categorisation of disability accounts for 7-9% of all disabilities in America (Verbrugge & Yang, 2002). Her impairment can be identified as upper arm phocomelia (shorter arms than the average person) resulting from Thalidomide exposure.

The interview was conducted using an unstructured face to face method and lasted around one hour. It took place in the interviewee's home at the kitchen table. Permission was received from the interviewee to collect a voice recording of the interview. Over and above the audio recording the interviewer took detailed notes throughout the proceedings.

Results

In order to describe the interview process and accurately present the collected information, the results section will briefly provide explanations for any adaptations made to the interview script and will subsequently provide a summary of the content of the interview. The content will be grouped and organized into 6 themes. During the interview process minor modifications were made to the interview script. The majority of modifications to the interview script were made because the interviewee had answered a question earlier in the interview. The interviewer also omitted certain questions because they felt inappropriate and unnecessary after having heard previous answers. Following the interview it was discovered that the audio recording malfunctioned and only caught the first 5 minutes of the discussion. Luckily detailed notes were also taken as a precaution in case such an event took place.

Following is an account of the proceedings of the interview and a description of the themes that emerged. The first minute of the interview was spent identifying demographic information about the interviewee. Refer to the first 5 questions available in Appendix A. All the questions following number 5 allowed for the development of 6 majors themes:

Theme 1: The evolution of a disability identity.

The evolution of "Ruth's" disability identity was evident throughout the interview. For example "Ruth" repeated twice during the interview, "If you would have asked me to do this 10 years earlier I would have said, no I don't have a disability". Now she admits that since her involvement with TVAC she has opened her eyes to the fact that she is a person affected by the Thalidomide drug and has concluded being different is not a bad thing. She identifies mostly to the able-bodied community but also to her disability community. Studies indicate that individuals with an early-onset disability often have stronger disability identities; this aligns with the interview findings (Verbrugge & Yang, 2002).

Theme 2: Coping strategies that minimize the impact of discrimination.

This theme was surprising because often the largest obstacles for the disabled are not the physical limitations but the social attitudes and stigma surrounding their disabilities (Olkin, 1999). However, the interviewee claims, "I have had very few times where I have felt discriminated against. I tend to remember more the positive events". When asked to provide an example of discrimination she mentioned a bully in grade school who used to call her "little miss no hands" but claims all children go through some form of bullying. This is a form of positive coping and has minimized the impact of discrimination on "Ruth" overall interactions with society, in contrast to the expected norm. Today she experiences very little discrimination in her every day life.

Theme 3: Family Support and Coping.

The interviewee indicated that coping was mostly possible through close relationships with friends and family. "Ruth" expressed immense appreciation towards her parents for their constant support. She said "My mom always told me I could do what everyone else can... She worked so hard at making me view myself as normal... I remember when she fought with the school board to put me in a normal class". Her mother obviously played a pivotal role in her positive social adjustment. Family support was key to her self image.

Theme 4: Experience with personal health and the health care systems.

An overall positive experience with doctors and hospital is described by "Ruth". However, she did go through many corrective and esthetical surgeries during her childhood to improve the functionality of her upper limbs. Even if she does not remember her experiences, she claims "My first surgery was when I was 6 months old... before I started school I went through 12 to 13 surgeries". "Ruth" claims that her most difficult experience at the hospital was undergoing a corrective surgery, which took place under 5 years ago. It was 6 weeks before she recovered and she felt very helpless being out of work. "Ruth" also claims that today she is experiencing pain in her neck and shoulders.

Theme 5: Romantic relationship.

"Ruth" talks about a very healthy romantic relationship that evolved between her and her husband. They first met in high school. However, she says "When he left for college I thought that was it, but he continued to call on special days like Valentines Day". She ended up at the same college as him and they ultimately married. Currently "Ruth" is happily married with 2 children, demonstrating how her disability proved to cause no difficulty in finding a life partner.

Theme 6: Being a mother.

Very few issues emerged about "Ruth's" physical disability interfering with the daily tasks of being a mother. However "Ruth" got emotional when discussing her high expectations from her children. She could not hold back tears as she explained "Because I was not perfect, my first child had to be perfect... I was too difficult on him". She continues on to state "My children are my life". She raises them to not feel pity for people with disabilities, but to see them as people with challenges like everyone else.

Discussion

The interview content brought forward some interesting findings that the author further investigates using theories relating to disability, acquired from the scientific literature. A first concept that merits further investigation is "Ruth's" evolving identity relating to disability. Throughout her life she identifies to all three of Olkin's disability identity groups, which will be described further. Initially she denies her disability and thus identifies more with the able bodied community. At this stage she is relating to Olkin's functional limitations group. A transition of disability identity takes place later in her life as a result of her involvement with the TVAC association. She begins to get politically involved with her disability community and starts viewing disability as a social construct. At this point she is identifying with Olkin's civil rights group. Today "Ruth" is no longer involved with TVAC. She has incorporated her disability into her self concept and tries to live a normal life. Today she identifies with Olkin's disability identity group (Olkin, 1999). The literature indicates that identifying with a disability culture is important, as it allows for a transformation of consciousness about ones self which is a great form of rehabilitation (Galvin, 2003). This is evident in the interviewee's case as she admits: "I feel confident with who I am today", thus depicting how progressively she has built a strong identity and a sense of self worth.

More so, the interviewee's experience of discrimination deserves a detailed analysis. Discrimination and stigma associated to disability is recognised as a common problem for social integration. According to Goffman's framework about stigma, "Ruth" who possesses a non concealable impairment, would be expected to experience negative attitudes of discrimination from her overall surroundings (Goffman, 1986). However she claims to have had very few such encounters. Her overall experience may be related to her positive coping through her social skills and her competencies. It is known that as a person integrates the disability into a robust sense of self, others are more likely to display similar positive attitudes (Olkin, 1999). Such an explanation fits "Ruth's" personality profile perfectly. She is a very competent woman, who makes frequent use of her social skills and her disability identity is strong.

Another concept that was brought forward in the interview is a family's impact on the socialisation outcome of disability. Early-onset disability leaves family members with an important role in creating or inhibiting a positive identity for the child. The two most pivotal factors in the family's response to a disabled child are, first to accept that child as a full member of the family and second to accept the disability itself (Olkin, 1999). Two studies confirm that an individual's acceptance of their physical disability can be influenced by the degree of parental acceptance of the handicap and the mother's psychological adjustment to the situation (Barakat & Linney, 1992; Gingras et al., 1964). "Ruth's" outgoing personality and overall successful adaptation to her disability can thus be partially attributed to her family's constant support, successful adaptation and her mother's persistence in integrating her into normal society.

Additionally, even if the discussion of "Ruth's" experience with the health care system is brief, it is valuable. The author recognised that "Ruth's" strong, motherly and nurturing family roles made the recovery from her most recent surgery difficult to deal with. The conversation about this topic revealed her reluctance to accept her sick role. The sick role is the vulnerable status society allows people to assume when they are sick. The reluctance related to assuming this role is common in the case of most mothers (Geertsen & Gray, 1970). Even if the interviewee has very little recollection of her childhood surgeries, it is usually a very traumatic experience to go through. Often the foreign environment of the hospital and separation anxiety can cause a strong sense of loss of control for children, which can be very troubling. Moreover, her accounts of neck and back pain harmonize with new findings in the literature. A recent study on people living with the effects of Thalidomide indicates that of patients with limb loss, 40-45% experience subsequent pain affecting the upper spine or shoulders (Datta, Selvarajah, & Davey, 2004).

A final concept to address from the interview is the attitudes surrounding disability and relationships. A common myth exists that the able-bodied cannot be attracted to disabled individuals. A study evaluating Thalidomide survivors indicates that 7 out of 10 survivors lived with a partner and over half had children (Bent, Chamberlain, Neumann, & Tennant, 2007). It is thus not rare for an individual living with a Thalidomide related defect to find a partner. Research also proves that when a person with a disability gets married, this union is more satisfying than marriages that are joined later by disability (Olkin, 1999). “Ruth’s” strong marriage to her husband is therefore supported by a vast amount of scientific literature.

In conclusion “Ruth’s” accounts show that living with disability is a unique experience that can lead to positive outcomes. The negative connotation that surrounds the concept of disability should be abandoned. Society should stop discriminating against this minority group and allow them equal status and opportunities. If all parents could raise their children to view individuals with disabilities in a positive light, like “Ruth”, society would become more tolerant. More extensive research is needed to further represent the voices of the disability community. This will promote the healthy desensitization of society’s negative perceptions of disability, and allow for a better overall understanding and acceptance of the disability experience.

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Appendix A

Interview Script

Introduction

The general aim of this interview is to uncover your overall life's experience as a person with a disability. Some personal questions may be asked, if you feel uncomfortable answering any of these questions don't hesitate to let me know. The interview will be split into two sections: the first includes demographic questions and the second includes questions relating to different life events:

Demographic questions

1. How old are you?
2. What is your current occupation?
3. How large was your family growing up?
4. What is your level of Education?
5. For the purposes of this project I must ask, what is the nature of your disability?

Life events and experiences

Discrimination

6. At what age did you first recognize that you were different from others and how did you come to realise this?
7. What period of your life was the hardest to deal with?
    A) Probe: Would you say you faced certain forms of discrimination? If so can you give me an example

Coping and Support

8. How did you cope with peoples reactions to you?
9. Tell me about your relationship with your parents.
    A) Probe: How did or didn't they support you?

Disability identity

10. How do you identify yourself with regards to your disability today?
11. Have you ever done any active lobbying in your community for yourself and others with the same impairment?
12. Do you believe having a disability from birth allowed for a better adaptation to living with a physical disadvantage?

Experience with health care community

13. How has your overall health been?
    A) Probe: Have you been to the hospital often, if so for what type of treatment of care?
14. How have your interactions with the medical community been overall?

Romantic relationship

15. Tell me about how you and your husband met?
16. Did you ever question your ability to find a life partner?

Motherhood

17. What were the biggest challenges of being a mother?
18. Did you find your impairment got in the way of a lot of daily tasks?
19. How rewarding is it being a mother?

The Over-prescription of Ritalin for Suspected Cases of ADHD

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Résumé :

(traduction)

Le méthylphénidate (Ritalin), qui est le traitement le plus souvent prescrit pour l'hyperactivité avec déficit de l'attention (HDA), a été de plus en plus prescrit au cours des dix dernières années. Vu l'absence actuelle de fondements biologiques du diagnostic de HDA, les médecins posent leur diagnostic en fonction de symptômes comportementaux, comme l'hyperactivité du sujet et son incapacité à fixer son attention. Étant donné que n'importe qui peut faire preuve de ces comportements à un moment de sa vie, le risque qu'on diagnostique trop souvent cette maladie augmente, ce qui peut provoquer de trop nombreuses ordonnances de Ritalin. La documentation relative à la HDA indique que les critères utilisés pour diagnostiquer cette maladie ont beaucoup changé depuis qu'elle a été identifiée pour la première fois, si bien que les experts ont des opinions diverses en ce qui concerne les facteurs pouvant être considérés comme des symptômes de ces troubles. De plus, de récentes recherches ont démontré que le Ritalin pouvait améliorer les facultés cognitives des gens bien portants tout autant que des sujets atteints de HDA. Les données indiquent que des gens sains cherchant à améliorer leurs facultés cognitives risquent d'abuser du Ritalin, et, d'ailleurs, on a signalé que des étudiants l'utilisaient pour améliorer leur rendement scolaire. De plus, la sur-prescription de Ritalin pose plusieurs questions éthiques. Les enfants étant le groupe pour lequel le HDA est le plus susceptible d'être diagnostiqué, les critiques se demandent s'il est approprié de prescrire un médicament pour une maladie à diagnostic comportemental qui, selon eux, risque de nuire à l'originalité et à la créativité des enfants, et donc d'entraver leur développement personnel. Même si d'autres thérapies comportementales existent pour cette maladie, elles ont tendance à être plus onéreuses et plus longues que la simple prescription d'un médicament, ce qui peut expliquer pourquoi le Ritalin demeure le traitement le plus fréquent. L'auteur conclut qu'il faut être prudent lorsqu'on prescrit des médicaments pour la HDA, et qu'il faudrait consacrer davantage de temps et de ressources à l'élaboration de critères de diagnostic plus cohérents, ainsi que d'autres traitements potentiels que les médicaments pour cette maladie.

Mots-clés : Méthylphénidate, Ritalin, sur-ordonnancement, HDA

Abstract:

Methylphenidate (Ritalin), the current leading form of treatment for Attention Deficit Hyperactivity Disorder (ADHD), has seen a dramatic increase in prescription rate over the past ten years. No contemporary biological basis for ADHD diagnosis results in physicians making their diagnoses based on behavioural symptoms such as hyperactivity and inability to focus. Considering that these symptoms are behaviours that anyone may express at one point in their life, the risk of over-diagnosis of the disease increases. This may subsequently lead to over-prescription of Ritalin. This paper aims to evaluate and identify the causes and effects of Ritalin over-prescription. Key literature on ADHD reveals that the diagnostic criteria for ADHD has undergone various modifications since the disease was first identified; therefore, different experts may have different opinions on what are regarded as symptoms of the disorder. Furthermore, recent research has demonstrated that Ritalin can increase cognitive performance in both healthy individuals and in ADHD patients. Such data indicates that Ritalin has the potential to be abused by healthy individuals looking to increase their cognitive performance. Correspondingly, Ritalin has been reported to be used by college students to boost their academic performance. In addition, the over-prescription of Ritalin raises several ethical issues: as children are the most common age group to be diagnosed with the disease, critics question whether prescribing a drug for a behaviourally based diagnosed disease is appropriate; also it is thought that the drug may affect the originality and creativity of the children which may hinder their personal development. While alternative behavioural therapy is available for the disorder, it tends to be more expensive and time-consuming than a drug prescription; this may explain why Ritalin remains the dominant form of treatment. This paper concludes that the prescription of drugs for ADHD should be cautioned and that more time and resources should be invested on developing consistent diagnostic criteria as well as potential alternative treatments to drugs for the disorder.

Keywords: Methylphenidate, Ritalin, over-prescription, ADHD

Introduction

The prescription of drugs for a socially determined illness is readily seen in the case of Methylphenidate (Ritalin) and Attention Deficit Hyperactivity Disorder (ADHD). "A review of prescription data for 300,000 children ages 19 and younger concluded that, for the first time in history, spending for medications for childhood behaviour problems eclipsed expenditure on any other child drug category, including antibiotics" (Sparks & Duncan, 2008, p. 2). Evidence like this raises concerns over the possibility of Ritalin over-prescription for ADHD, especially in children as the disorder is mainly seen in childhood. Controversies such as the unclear and changing definition of the disorder, the subjective and behavioural basis of diagnosis contrasted with a biological basis to treatment, the potential for abuse due to the positive effects of the drug, and possible ethical breaches such as restricting childhood liberty are related to the over-prescription of Ritalin.

Diagnosis and Treatment

ADHD was first clinically defined by William Still in 1902, with inattention and hyperactivity being the major symptoms of the disorder (Brimble, 2009). Despite attempts to increase the objectivity of diagnosis with biological measures, such as neuropsychiatric tests and laboratory measures (Volkmar, 2003), ADHD rests mainly as a clinical diagnosis through identifying behavioural symptoms of the patients. This suggests that the clinical (Volkmar, 2003) diagnosis of ADHD is primarily subjective and less certain than those of other more rigidly defined diseases such as osteoporosis and cancer. Conflicting medical expert's views and ideas regarding ADHD (Brimble, 2009) may contribute to why different versions of the 'clinical checklist' of behavioural symptoms have come out since the disorder was first described. Furthermore, diagnosis of ADHD is especially difficult in children as symptoms of ADHD are based on judgments of behaviour relative to other children and many behavioural symptoms of ADHD can be seen as normal behaviour for children (i.e., it is normal for some children to be hyperactive) (Mick, Faraone, & Biederman, 2004). These factors demonstrate the subjective nature of diagnosing ADHD which makes it difficult for the medical society to create a strict definition for the disorder.

Drug prescription, notably Ritalin, is increasing as the main form of treatment for ADHD (Dopheide, 2009). Considering that drug treatment has been shown to be successful and cost-effective in behaviour problem children since 1937 (Dopheide, 2009), it is reasonable that diagnosis of the disorder leads to the prescription of Ritalin in many cases. However, the definition of ADHD is still subjected to debate, and it has been observed that diagnosis of the disease is increasing as the diagnostic criteria changes (Brimble, 2009). This can lead to the over-diagnosis of the disorder, which can in turn result in over-prescription of the drug treatments such as Ritalin. While there is little proof available that supports ADHD being over or misdiagnosed and Ritalin being over-prescribed (Brimble, 2009), such evidence can be counteracted as symptoms are still ever-changing and diagnosis is still difficult (Brimble, 2009). It is potentially less favourable to prescribe drug treatments that act on an uncertain biological mechanism when the diagnosis is typically behaviourally rooted.

Potential for Abuse

While there is continuous debate about how ADHD should be defined and diagnosed, it has been shown that Ritalin can indeed help people diagnosed with ADHD by enhancing their cognitive ability. A recent study has indicated that children with ADHD who take Ritalin have shown significant improvement in focusing and paying attention to their surroundings (Jahromi et al., 2009). The drug is able to counter the inattention symptom of the disorder; it is also capable of improving patients' self-regulation ability (Jahromi et al., 2009), which helps to control impulsiveness caused by the disorder. Furthermore, Ritalin is known as one of the least risky treatments for ADHD in terms of side effects, with the most common side effect being mild moodiness, dry mouth, and appetite suppression (Flaskerud, 2010). These factors all contribute to Ritalin being the most sought-after treatment for ADHD.

Problems emerge when recent studies demonstrated that Ritalin's effect on cognitive performance is not exclusive to people with ADHD; it also has positive effects on normal individuals (Agay, Yechiam, Carmel, & Levkovitz, 2010). According to these studies, normal individuals who take Ritalin have been shown to perform better in some of the cognitive tests than those who do not use the drug (Agay et al., 2010). Since the drug can have positive effects on both ADHD patients and normal individuals, it may propagate misdiagnoses of the disorder. Albeit as previously stated, the diagnosis of ADHD is predominately behaviourally based and there are limited biological methods to validate that the diagnosis is correct. For example, assume that a child is suspected of having ADHD and Ritalin is prescribed as the treatment. The improvement in cognitive ability of the child upon treatment does not necessarily confirm the correctness of the diagnosis. This is largely due to the cognitive enhancing properties of the drug which may further reinforce parents' and doctor's misconceptions that the child has ADHD. The doctor may continue to prescribe Ritalin based on the observation that the treatment has a positive effect on the patients, thereby contributing to the over-prescription of Ritalin.

As a stimulant, Ritalin is capable of activating neurons in the brain which are responsible for working memory and visual attention (Tomasi et al., 2010). With such findings, Ritalin may not only be perceived as a treatment for ADHD patients, it may also be considered as a 'smart drug' for individuals who want to improve their performance in school or at work. According to the 2002 Student Drugs Survey in the Atlantic Provinces of Canada, use of Ritalin for medical purposes was reported to be at 2.2%, while non-medical use was reported to be at 6.6% among the student population in the study (Poulin, 2007). Some of the most common reasons for student use of Ritalin include boosting memory, improving focus, and attraction to other desirable stimulant effects (Flaskerud, 2010). This phenomenon can be explained in a sociological perspective. According to Outram (2009), Ritalin is constantly associated with enhancement in cognitive performance; the assumption that Ritalin will help to achieve success in competitive environments such as school and work is a strong motivator for the use of the drug. In societies where academic performance can play a big part in future success, drugs that are perceived as 'brain-boosting pills' may be embraced by students or parents who want to gain an edge. Such benefits of the drug can increase the probability of the drug being used for non-medical purposes and further exacerbate over-prescription of the drug.

Ethical Concerns

Despite tremendous amounts of debates over the definition of ADHD and the efficacy of Ritalin on both ADHD patients and normal individuals, medical treatment for ADHD seems to be the preference in North America. This may be in part because it conforms to the Libertarian values of promoting biological intervention for the good of society (Sadler, Jotterand, Lee, & Inrig, 2009). Considering Libertarian values such as free market and minimum government interventions to promote economic growth, the medicalization of ADHD may be favourable as it opens up possibilities for investment in pharmaceuticals that treat the disorder while maintaining minimum government intervention and support from taxpayers. For example, if ADHD diagnosed individuals were seen as having special needs, similar to individuals diagnosed with autism, then the government would be required to accommodate these individual's specific needs in school. However, when ADHD is viewed as a disorder that can be controlled via Ritalin, the government is able to maintain minimum involvement, therefore increasing economic gain via the pharmaceutical industry while reducing taxpayers' economic loss (Clarke, 2008). Regardless of the economic benefits for society to medicalize ADHD and to allow pharmaceutical industries to intervene, it can be argued that it is unethical to jeopardize the quality and types of treatment available to ADHD patients for the benefits of the economy.

The treatment of a socially determined illness such as ADHD via a biological approach raises ethical concerns over the liberty of children. Singh (2007) defines the liberty of children as "including personal authenticity, autonomy, the right to self-creation, and the rights of parents to shape the capacities of their children" (p. 168). This restriction of children's liberty is shown in that parents are frequently deciding when or if the drugs should be taken as opposed to the child. Furthermore, Singh (2005) concluded that there is a difference between the mother's and father's views on Ritalin administration for ADHD. She argues that mothers see Ritalin as helpful to appease their own "struggle to satisfy cultural ideas of successful boys" (p. 43) while fathers see Ritalin dosing dilemmas as related to gender norms and masculine behaviour. For example, a boy who is otherwise unfocused and overactive may perform better in sports when taking Ritalin. Often, good performance in sports is considered a defining characteristic of masculinity and may influence dosing by parents. Therefore, decisions to diagnose children can be said to be heavily loaded with social, cultural, and contextual meanings. Moreover, Ritalin poses other ethical concerns as it can have an impact on children's cognition which can limit their future success by 'dulling' their creativity (Singh, 2005).

Behavioural therapy, including techniques such as positive reinforcement and improving social skills, has not been used as often as it possibly should have been likely because it is more expensive and more difficult to access than drug treatments (Brimble, 2009). Resistance to the suggestion of behavioural therapy will likely arise as medical treatment of ADHD has been shown to be successful, easier to access, and cheaper than that of behavioural treatments (Brimble, 2009). Nonetheless, resistance to behavioural therapy should be re-evaluated in considering that treatment of a behaviourally-based disease via a behavioural method would coincide (Brimble, 2009). Behavioural treatment would likely minimize ethical concerns by matching a social treatment with a social diagnosis and reducing the amount of drug prescription and use for a poorly defined disease. This would reduce overall rates of Ritalin prescription which has been associated with a restriction of childhood liberty and creativity.

Conclusion

After considering both the benefits and consequences of using Ritalin as a treatment for ADHD, it is clear that it should be approached with caution. Inconsistent checklists for symptoms create uncertainty surrounding diagnosis while positive effects of Ritalin exhibited on both normal and ADHD populations' leads to increased likelihood of abuse and over-prescription. In addition, Ritalin, most often prescribed to children, creates a special case concerning the liberty of children and treatment methods that do not match diagnosis criterion. Moreover, there are many ethical issues concerning Ritalin prescription. Ritalin can be shown to be over-prescribed considering the controversies surrounding the drug as well as the uncertain, behavioural, and subjective nature in diagnosis. To avoid over-prescription, prescription of Ritalin should be done with caution or other methods of treatment for ADHD should be primarily used until a more rigid definition of the disease is determined.

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A Critique of Gender Identity Disorder and its Application

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Résumé :

(traduction)

Pour certains, avoir un trouble de l'identité sexuelle (TIS) devient la seule manière d'obtenir une inversion sexuelle chirurgicale (ISC). L'auteur va démontrer que, en fonction de son application, le TIS agit comme un mécanisme de régulation problématique.

L'auteur expliquera que les TIS normalisent une vision dichotomique de la notion de genre. C'est ainsi que les applications implicites du TIS permettent aux professionnels de la santé de consolider leur opinion relative à ce qu'est un comportement approprié en fonction du genre, ce qui normalise encore davantage la vision binaire de la notion de genre.

Les compagnies d'assurance exigent un diagnostic de TIS pour fournir une aide économique à ceux qui souhaitent obtenir une inversion sexuelle chirurgicale (ISC). Ceux qui n'ont pas les moyens de s'offrir une inversion doivent correspondre à un profil de TIS pour pouvoir obtenir une ISC. L'auteur va démontrer que c'est inacceptable, et que cela fait fonctionner le TIS comme un mécanisme de régulation.

Faire appel à un diagnostic de TIS risque de stigmatiser encore davantage le sujet qui souhaite avoir une inversion, car il doit avoir recours à la détresse comme mécanisme explicite de diagnostic. Le fait de devoir obtenir un diagnostic de TIS peut mener à l'intériorisation les côtés négatifs du diagnostic.

L'auteur fera une critique du TIS comme forme de psychopathologie, et le reliera à l'idée de TIS à titre d'appareil de régulation. L'auteur démontrera qu'il ne devrait pas y avoir de lien entre l'inconfort éthique et une inversion sexuelle chirurgicale exempte de tout TIS. Il montrera aussi que cette psychopathologie a des capacités normalisatrices qui enracinent encore davantage la dichotomie entre les genres.

Il est important d'envisager de supprimer la TIS du DSM, à condition toutefois de toujours offrir au sujet un soutien financier pour son inversion sexuelle chirurgicale sans qu'il ait besoin d'avoir recours à l'évaluation d'un professionnel de la santé mentale.

Mots-clés : Trouble de l'identité Sexuelle, éthique, psychiatre, psychopathologie

Abstract:

For some, Gender Identity Disorder (GID) becomes the only way to achieve sex reassignment surgery (SRS). It will be shown that GID acts as a problematic regulatory mechanism based on its application.

It will be argued that GID normalizes a dichotomous view of gender. In this way, GID's implicit applications allow the mental health professional to assert their views of what proper gendered behavior is, further normalizing a binary view of gender.

Insurance companies require a GID diagnosis in order to provide economic assistance to those wishing to undergo sex reassignment surgery. Those who cannot afford to transition must fall under GID's gaze in order to achieve SRS. This will be shown to be unacceptable and a way in which GID operates as a regulatory mechanism.

Appealing to a GID diagnosis can further stigmatize the individual who wishes to transition due to the necessitation of distress as an explicit mechanism of diagnosis. Having to fall under GID may internalize the negative aspects of the diagnosis.

A criticism of GID as a form of psychopathology will be given and also be linked to the idea of GID as a regulatory apparatus. It will be shown that there should be no link between ethical discomfort and GID-free sex reassignment surgery. Also, it will be shown that psychopathology has normalizing capabilities that further entrench gender binaries.

It is important to consider the removal of GID from the DSM, but, as a condition, still offer funding for sex reassignment surgery without having to appeal to a mental health professional's assessment.

Keywords: Gender Identity Disorder, ethics, psychiatrist, psychopathology

Introduction

The Diagnostic and Statistical Manual of Mental Disorders (DSM), which has gone through several revisions and editions, has become the holy grail of psychiatric nosology. With the DSM-V set to be released in 2013 (American Psychiatric Association, 2000), it becomes important to critique contentious "conditions" contained in the previous edition, allowing them to become skeletons in the closet instead of relevant points of staunch criticism. In the past, homosexuality was included in the DSM. Today there is Gender Identity Disorder (GID), or gender dysphoria. GID is identified in the DSM-IV as consisting of four mechanisms of diagnosis:

A strong and persistent cross-gender identification (not merely a desire for any perceived cultural advantages of being the other sex).

Persistent discomfort with his or her sex or sense of inappropriateness in the gender role of that sex.

The disturbance is not concurrent with a physical intersex condition.

The disturbance causes clinically significant distress or impairment in social, occupational, or other important areas of functioning (American Psychiatric Association, 2000).

GID first made its appearance in the DSM-III, shortly after the establishment of the Harry Benjamin Gender Dysphoria clinic, and has made its way into the DSM-IV and the DSM IV-TR (American Psychiatric Association, 1980; Lev, 2006; Meyer-Bahlburg, 2009). The founding of the Harry Benjamin Gender Dysphoria clinic created a centralized force from which to offer standards of care and research in regards to Sex Reassignment Surgery (SRS; also called transitioning) and provide this information publicly (Meyer-Bahlburg, 2009). In the US, a GID diagnosis is needed before insurance coverage for SRS can be given/ performed (Butler, 2004; Lev, 2006; Levine & Solomon, 2009). As Lev (2006) explains, "[i] n Western cultures… sexed bodies and gender expressions are severely proscribed, assigned, and delineated and deviations from these norms are classified within the sphere of the medical and psychiatric establishments" (p. 42).

The purpose of this paper is to critique the use of GID as a "regulatory apparatus", as Butler (2004) has referred to it, in achieving hormone prescriptions and SRS. A GID diagnosis also acts as a regulatory apparatus by having the authority to approve economic assistance for those who could not otherwise afford SRS. The process of SRS will also be referred to as transitioning throughout this paper. The mental health professional's role in regulating the implicit aspects of a GID diagnosis will be critiqued. Also, the explicit need for "significant distress or impairment" to satisfy the fourth mechanism will be considered as a limitation of the individual's narrative (American Psychiatric Association, 2000).

It will be argued that GID allows further stigmatization of the individual by the continued application of this diagnosis. Many authors believe GID is psychopathologic and should remain in the DSM because of this (ex. Levine & Solomon, 2009; Zucker, 2009). Psychopathology is defined as the extreme end on a continuum of behavior (in this case gendered behavior), or any condition that requires one to be seen by a mental health professional (Levine, 2009). When looked at through a psychopathologic lens, GID becomes transphobic as it assumes normal gendered behavior in relation to disordered behavior (Lev, 2006).

This critique is by no means an attempt to invalidate the benefits that have been obtained by those who have been able to transition because of GID's inclusion in the DSM. Instead it is an attempt to argue for the same benefits of coverage (and more) free of psychopathology. It is an argument for freedom in transitioning without the use of a regulatory apparatus that serves to further marginalize the individual.

GID as a regulatory apparatus

It seems important to submit a brief explanation of the Foucauldian regulatory apparatus in order to proceed. For this, we will be examining Butler's interpretation of GID as a regulatory apparatus. An individual precedes regulation, but one is only realized as a subject through regulation (Butler, 2004). To explain further, GID represents a regulatory force that lays the framework for comprehension of the subject within a system that maintains a binary view of gender (Butler, 2004). GID as a regulatory apparatus serves to pathologize "abnormal" gender behavior in individuals as a means of social control. In this way, when an individual submits to GID, they must be weighed against what is deemed to be "normal" gendered behavior in order to fall under this diagnosis (Butler, 2004).

GID: Promoting a Problematic Binary View of Gender

In 1980 the DSM-III provided the first incarnation of GID (contained under Psychosexual Disorders) under which fell the subcategories of Transexualism, Atypical GID, and GID of Childhood (American Psychiatric Association, 1980; Meyer-Bahlburg, 2009). It was not until 1994 that the DSM-IV (American Psyciatric Association) saw GID under its current position within the realm of “Sexual and Gender Identity Disorders” (Meyer-Bahlburg, 2009).

Prior to the inclusion of GID in the DSM-III, researchers maintained vitriolic views towards persons who are transsexual. For instance, Simolopoulos (1974) viewed gender identity within the trans- sexual community to be entrenched in psychosis. It seems that GID was created in a time when the social climate was much harsher towards individuals transitioning (not to say it is far better today), but it still persists as a diagnosis.

GID rests deeply ingrained in the current binary norms of gender (i.e., masculine/feminine), pathologizing attempts at creating a gender identity that strays from the norm (Butler, 2004). GID requires that a correction be made due to discomfort in one’s current gender role (Butler, 2004).To echo a popular Foucauldian analysis, the existence of GID reveals an inherent medical prejudice due to its ability to institutionally seek out “deviant” behavior in an attempt to maintain social control (Lev, 2006).

Instead of a binary view of gendered behavior it seems reasonable to assume the gendered behavior occurs along a spectrum, but never reaches the point of abnormality simply because it does not reflect the physical representation of one’s sex. The desire to transition should not necessitate conforming to the gendered behavior of one’s desired post op sex to satisfy a binary view that is upheld by the mental health professional. Viewing gendered behavior free from abnormality in this way ensures that the more dominant modes of gender behavior are not viewed as the only legitimate forms of behavior.

GID as a Gateway for funding

Under our current system, medical/mental health professionals are the gatekeepers for SRS for people wishing to transition. Insurance providers within the US require a GID diagnosis to offer financial compensation for expensive procedures and to be prescribed hormones by a physician, which are given prior to SRS (Lev, 2009; Levine & Solomon, 2009; Murphy, 2010). Thus, one would have to appeal to all four mechanisms of a GID diagnosis for economic assistance.

Financial support is crucial for those who wish to transition. The various procedures and hormones that are needed by transitioning individuals are extremely expensive (Butler, 2004; Lev, 2006). For those who are not independently wealthy, being diagnosed with GID becomes the only way to receive aid from insurance companies who offer economic assistance. Currently we hold people hostage to diagnostic nosology for insurance coverage (Butler, 2004; Lev, 2006).

Many view transitioning to be an essential step in their life, one that can make life livable (Butler, 2004; Giordano, 2010). GID acts as a regulatory apparatus by serving to dismiss the complexities of the individual in favor of deciding who can fit within transsexualism and who deserves insurance coverage (Lev, 2006). An attempt to display behavior that is abnormal by GID’s standards is to be forced to proceed without the economic assistance that it is currently used for. Providing insurance coverage for SRS free from GID should be acknowledged as a proper move towards curbing this problem.

There are more implicit uses of GID by the mental health professional. Before economic aid in transitioning can be given, one has to “prove” to the mental health professional that they can live within the desired gender role (Butler, 2004; Lev, 2006). In fact, the diagnosis is not complete until written proof from the “treating” psychiatrist states the individual transitioning will be able to “live and thrive” in their new gender (Butler, 2004, p. 78). This can mean having to cross-dress for certain periods of time and then, once “approved”, hormones are pre- scribed for a certain period of time pre-SRS (Butler, 2004). Thus, a complete diagnosis of GID requires the mental health professional to assert their own view of the “normal” through absolute definitions of proper gendered behavior in order to legitimize an individual’s desire to transition.

An Argument Against the Use of GID as a Form of Psychopathology

If psychopathology does in fact draw the line between the “adaptive and the maladaptive” behavioral spectrum, necessitating the mental health professional, it follows that we should examine how such a spectrum works for GID (Levine, 2009, p. 46). As previously explained, those who have to appeal to the four mechanisms of diagnosis in order to get SRS and economic assistance for SRS are automatically funneled into the maladaptive section of this spectrum.

GID's implicit nature of allowing the mental health professional to define proper gendered behavior only allows individuals to display behavior and narratives that coincide with norms enforced by the mental health professional. Regulation acts in this way by defining what will be considered permissible within the interaction between the individual and the mental health professional. What of the individual who sees no impairment (social, occupational, etc.), but wishes to transition?

GID serves as a regulatory apparatus by labeling those who do not identify within the gender binaries as suffering from psychiatric illness in an attempt to control "atypical behavior". Labeling individuals as "deviants" who exist outside of the gender/sex binary normalizes a dichotomous view of gender (i.e., male and female). Appealing to GID is to disregard the lived experiences of individuals who do not fit within the medical model (Lev, 2006).

Levine and Solomon (2009) believe that if we were to discard GID physicians may experience something he calls "ethical discomfort." Levine and Solomon (2009) believe that ethical validation for physicians in aiding people will only be achieved by "compassionate treatment of an illness" (p. 46). Apparently, if GID slips away from medical discourse, physicians will become incapable of ethically validating the use of readily available procedures in aiding individuals in their transition. However, physicians readily dispense treatment outside of illness nosology and the maladaptive. Employing a similar argument to Hale (as cited in Butler, 2004): surgeons readily dispense breast reductions, penile enlargements, and various offshoots of the aforementioned procedures while paying little lip service to ethical validation through diagnosis.

Many authors cite post op regret as a reason for mental assessment prior to SRS (ex. Levine & Solomon, 2009). It is true, regret may occur following any type of transformative plastic surgery, but it does not follow that rigorous assessments and a diagnosis be required as a regulation. Breast augmentation and penile enlargement do not necessitate psychopathology's grip in being achieved. Yet, regret may be exhibited after each operation.

The argument from ethical discomfort opts for a more paternalistic relationship between the physician and the patient by simply addressing the doctor's autonomy and brushing off the patient's knowledge of their body and the freedom to alter it accordingly. Using this train of thought, it becomes increasingly important to address why procedures for the "gender atypical" presenting person deserves the stigmatizing diagnosis of GID in order to be realized. As Butler (2004) puts it, "most medical, insurance, and legal practitioners are only commit- ted to supporting access to sex change technologies if we are talking about a disorder" (p. 92).

It seems necessary to consider why we readily draw a moral line down the acceptability in altering one's body through surgical procedures. The aforementioned procedures that exist without regulation all support a dichotomous normalization of gender. Only procedures that seem to reaffirm or rest within the "normal" are allowed to exist without psychopathology (Butler, 2004). In this way, GID acts as a regulatory apparatus by existing as a means to label certain gendered behavior as abnormal and psychopathologic, necessitation the mental health professional.

GID: Marginalizing the Individual

We should consider the ramifications of having to appeal to GID as a gateway for transitioning. Acting in a way to achieve a diagnosis can further marginalize the individual, as one has to appeal to a narrow classification in order to fulfill a requirement. The fourth mechanism of diagnosis in GID requires distress and impairment in individuals who are transsexual. Because insurance coverage requires a GID diagnosis, one has to be distressed and impaired in order to transition with financial aid.

Transitioning through the aid of insurance coverage presupposes disorder in the individual, presenting a problematic link between "disorder" and those wishing to transition (Lev, 2006). Should not coverage be granted to people who courageously decide to transition regardless of whether or not a distressed narrative may be present? As such, GID acts in a way that is restrictive of the individual (Butler, 2004).

Having to appeal to the fourth mechanism of diagnosis may internalize various pitfalls of the diagnosis, negatively impacting the person in question. With a GID diagnosis one has been found “sick, wrong, out of order, abnormal, and to suffer a certain stigmatization as a consequence of the diagnosis” (Butler, 2004, p. 76).

Butler (2004) goes on to explain that GID only perpetuates the pathologization of individuals who are transsexual, instead of acknowledging an individual’s ability to freely decide their gender. Despite sup- porting a certain form of GID psychopathological classification, Meyer-Bahlburg (2009) acknowledges that it will only perpetuate discrimination within the population. One would hope a diagnosis characterized by discomfort would not result in any more discomfort, but that is what GID may serve to do.

Psychopathology’s Normalizing Capabilities

GID’s normalizing capabilities are shown effectively through its labeling of “disorder” in children. Several authors assert that we should consider how such a diagnosis affects the self-esteem of the child who otherwise suffers no mental “disorder” (Isay, 1997; Lev, 2006). GID, as a label for children, fosters condemning regulation of gendered behavior that is problematically labeled “abnormal” behavior. A child may have yet to develop the ability to withstand the stigma of being labeled abnormal in some way. A child may be greatly impacted by the view that they are somehow wrong in the way they behave (Butler, 2006).

The problem is also in how GID leaves the psychiatrist more concerned with the fulfillment of gender norms opposed to asking whether or not one has the support network to contend with a harsh social climate (Butler, 2004; Lev, 2006). With GID the focal point becomes the “condition” and the “curing” of the dysphoria. In this way GID only seeks to further a discourse concerned with reestablishing “typical” gender norms.

GID requires a persistent desire to fulfill one of the dominant binary gender roles in order to appear as a successful candidate of SRS (Butler, 2004). Any definition of normal gendered behavior is well beyond problematic and nebulous. Still, the mental health professional is allowed to perform a regulatory function by deciding who deserves insurance coverage for SRS based around certain notions of problematic gendered behavior.

GID enforces a form of regulation due to its normalization of a masculine/feminine view that is instituted by the mental health professional (Butler, 2004). Considering this, GID no longer represents the individual properly, but instead removes the freedom from the individual to display a full spectrum of behavior (Butler, 2004). Appealing to GID turns individuals into a series of transposable cogs that, when operating in unison, create the process of normalization (Butler, 2004).

In Closing

This is not an attempt to dissuade people from seeking aid from a mental health professional, but an argument against forcing those who are economically disadvantaged to see a mental health professional and submitting to a diagnosis that normalizes a dichotomous view of gender. A GID diagnosis provides individuals who are transsexual the channel to receive economic assistance in transitioning, which may not have occurred otherwise. In fact, it is necessary to stress how important it is that funding has been provided through this diagnosis.

Still, can financial assistance be given without its existence? One should be even more critical of a diagnosis that holds the less financially well-off individuals under its gaze (Butler, 2004). Should not regulatory pathways that further marginalize those who cannot afford treatment be viewed with harsh criticism? GID disregards the complexities of the individual and applies a widely stigmatized label to the individual.

Many researchers believe that the removal of GID from medical discourse would cause insurance coverage for those transitioning to dry up (Levine & Solomon, 2009; Meyer-Bahlburg, 2009). The argument that has been made throughout this paper hinges on continued coverage free of GID. Prior to GID’s elimination, a policy should be in place to ensure continued coverage for those transitioning. Some believe Civil Rights and anti-discrimination movements will be hindered once GID ceases to exist within the DSM (Meyer-Bahlburg, 2010). How- ever, there were marked political improvements in these areas once homosexuality was removed from the DSM, which would have been near impossible to realize for a population deemed “mentally ill” by the DSM (Lev, 2004).

GID should be acknowledged as a regulatory apparatus that enforces problematic notions of “proper gender behavior” that serves to limit the expression of the individual. The removal of GID will provide an adequate step towards acknowledging that "gender typical behavior" is not the standard, nor the only legitimate form of behavior. Homosexuality's removal from the DSM provides an adequate example of how removing GID can work to further acknowledge the individual without the use of pathologizing language. It is clear that continued coverage should be viewed as a necessity for those who wish to transition without the use of GID as a form of regulation.

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Case Based Learning Teaching Methodology in Undergraduate Health Sciences

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Résumé :

(traduction)

L'apprentissage par cas (APC) est une méthode d'enseignement interactive faisant intervenir de petits groupes de discussion afin de déterminer un éventail de solutions à un cas clinique donné. Vu la réussite de cette approche dans de nombreux programmes professionnels et de premier cycle, des étudiants seniors en sciences de la santé ont présenté, en 2009, un projet pilote dans lequel ils jouaient le rôle de facilitateurs de l'APC dans les cours de premier cycle de l'École interdisciplinaire des sciences de la santé (ÉISS) de l'Université d'Ottawa. En collaboration avec des professeurs de la faculté, ces facilitateurs ont élaboré des séances d'APC composées d'études de cas reflétant les objectifs de base des cours de sciences de la santé. Au total, 144 étudiants de premier cycle de trois cours de l'ÉISS ont participé à ces séances et ont été évalués en fonction du niveau de leur participation et de leurs réponses à un questionnaire composé de cinq questions évaluant leur maîtrise des notions abordées lors des séances d'APC. Ces étudiants ont également évalué le projet pilote. Sur une échelle de 1 à 5, les étudiants ont obtenu une note moyenne de 4,13 sur 5,00 (SD 1.48) au questionnaire. Dans leur évaluation du projet, les étudiants ont noté 3,82 sur 4 la valeur globale de l'apprentissage. Ils ont donc perçu ce programme comme ayant une certaine valeur d'apprentissage. Et les résultats du questionnaire ont confirmé que l'APC facilite l'application à des cas pratiques des connaissances théoriques acquises. Ces premières conclusions suggèrent que l'implantation de l'APC à l'ÉISS améliorerait l'expérience académique des étudiants. Des évaluations plus rigoureuses avant et après les séances, conduiraient à une amélioration des séances basées sur ce modèle.

Mots-clés : Apprentissage basé sur les cas; méthodologie d'enseignement; éducation de premier cycle; projets pilotes

Abstract:

Case-based learning (CBL) is an interactive teaching approach involving small-group discussion to determine a range of solutions for a presented patient case. In light of the success that the approach has achieved in numerous professional and undergraduate programs, a pilot project was introduced in 2009 by senior health sciences students, who acted as CBL facilitators, at the University of Ottawa for undergraduate courses in the Interdisciplinary School of Health Sciences (ISHS). In collaboration with faculty professors, the facilitators developed CBL sessions consisting of patient cases that were reflective of the core objectives of health sciences courses. A total of 144 undergraduate students from three ISHS courses took part in these sessions; they were evaluated based on the calibre of their participation and a quiz. The quiz consisted of 5 questions that evaluated the students' mastery of the concepts covered in the CBL session. The students also completed an evaluation of the pilot project. On a nominal scale of one to five, the students on average scored 4.13 out of a possible 5.00 (SD 1.48) marks on the quiz. In the evaluation, the students rated the project as having an overall learning benefit of 3.82 on a nominal scale of one to four. The evaluation indicates that the students perceived the program as having significant learning value and the quiz marks confirmed that CBL promoted the application of lecture content to practical scenarios. These preliminary findings suggest that implementing CBL in ISHS would enhance students' academic experience. Further sessions based on this model would improve from more rigorous pre- and post-session assessments.

Keywords:

Case-based learning, teaching methodology, undergraduate education, pilot projects

Introduction

Case-based learning (CBL) is an interactive teaching approach involving small-group discussion to determine a range of solutions for a presented patient case. Similar to the problem-based learning (PBL) approach used at medical schools, CBL promotes application of course-based knowledge to applied and practical situations. An experienced facilitator encourages students towards the solution, which they determine through discussion, critical thinking, deductive reasoning and group consensus. Since it was introduced at McMaster University's medical school in the 1970s, CBL has been lauded by experts in pedagogy, including Dr. John Cavanaugh, professor and associate chair and Wayne State University, as a superior learning technique that results in improved knowledge retention, heightened critical thinking, better collaboration amongst colleagues, and increased opportunity for interactions between teaching staff and students. A systematic review of the literature by Koh, Khoo, and Wong (2008) highlight the positive impact of PBL on the cognitive and social skills of medical students and physicians. Recently this self-learning approach has been expanded to several academic domains including medicine, science, business, and law. An emerging development is the implementation of CBL/PBL in undergraduate programs, where opportunities to learn interactively are valuable. The multitude of literature (cf. Bibliography) supporting the CBL approach, as well as its inclusion in the McMaster Health Sciences Program, has led to the initiative to incorporate CBL in the University of Ottawa's Interdisciplinary School of Health Sciences' (ISHS) undergraduate curriculum. The CBL initiative began in 2009 as a pilot project, spearheaded by senior health sciences students at the University of Ottawa. In conjunction with the program director, Dr. Linda Garcia, these students created a curriculum and evaluation framework, approved by the university's Faculty of Medicine that could be smoothly integrated into second and third year health science courses. The goals of the pilot project were to develop students' problem-solving skills and ability to apply course knowledge into practical scenarios and to cultivate collaborative skills and ability to work in groups. These skills are essential and invaluable to future health care professionals. The CBL curriculum structure was derived from the University of Ottawa Faculty of Medicine's CBL program. Facilitators were selected and trained on a set of standards and criteria developed and approved by Dr. Bell from the Faculty of Medicine, University of Ottawa. Session anatomy was based directly on the Faculty of Medicine's teaching model. In preparing to act as the facilitators for CBL sessions, the senior Health Sciences students designed numerous patient cases, which were then reviewed at weekly meetings. In the fall of 2009, the facilitators began running CBL sessions within French and English sections of Biological Basis of Disease, a third year health sciences course. In response to the overwhelmingly positive feedback these sessions received, additional students were recruited as facilitators and CBL was included in two more third year courses, Introduction to Pharmacology and Health Problems. The objective of this paper is to review the implementation of the 2009-2010 CBL pilot project by analysing the program's success, based on quizzes and student evaluations, and to provide recommendations for future CBL integration in the ISHS faculty and in other undergraduate programs across Canada.

Methodology

Development and implementation of the CBL pilot project included the following stages: selection and training of facilitators, creation of patient cases, the CBL session itself, and evaluation of the students.

Stages of Case Creation

The process of developing patient cases began with a thorough review of course curriculum to determine which concepts would be conducive to the CBL approach. After consulting with ISHS faculty and medical education experts, the facilitators conducted extensive research around the pertinent pathophysiological, clinical, and psychosocial aspects of the patient case. Subsequently, a PowerPoint presentation of the case was created which included an overview of the CBL project, the case presentation, detailed patient history, test result interpretation, diagnosis, treatment, and prognosis. A tutor guide was also designed to ensure standardised facilitation of the CBL sessions. Following case design, detailed tutor guides were prepared to ensure the standardisation of session delivery by facilitators (see Appendix 1 for an example from Health Problems).

Preparatory Material

Prior to their participation in a CBL session, students were required to review the Self Learning Module (SLM), which contained an overview of basic physiology and pathophysiology of the system of interest in the case. A sample SLM, created by facilitators, can be found in Appendix 2. Materials found in the SLM were taken directly from relevant material found in the courses selected for the pilot project.

Session Structure

The two hour long sessions began with taking attendance and familiarising the students with the CBL approach. As students reviewed the patient's symptoms as presented in the PowerPoint presentation, facilitators guided discussion and posed thought-provoking questions. At various points in the case, students were guided through the process of differential diagnosis (encouraged to make a list of potential diagnoses) with the help of research materials such as: text books, lecture notes, and internet sources. The patient's medical, social, and occupational histories were also considered. As the session progressed, students modified their differential diagnosis and interpreted test results with the facilitator's guidance. Once the diagnosis had been established, prognosis and treatment for the patient's condition were briefly discussed.

Marking Scheme

In all three courses, CBL participation counted towards five percent of the students' final marks. Students obtained a pass or fail participation grade, as described in Appendix 3. This participation portion of the grade promoted active presentation during the case. In addition to a participation mark, students also completed an end-session quiz, an example of which is found in Appendix 4. The final mark was out of a possible 5 points and was divided equally between the quiz and participation (as agreed upon by all participating faculty). After completing the quiz, students were encouraged to complete an evaluation of the CBL session.

Results

A total of 144 students participated in the CBL pilot study and received marks. Students wrote the quiz designed by the CBL team and completed an evaluation. There were five versions of the quiz per class, ensuring that all topics were evaluated equally over the entire student population and to limit the opportunity for copied answers. The data presented does not have a large distribution as the quiz mark is out of 2.5 (based out of five questions). The first of the three classes had an average mark of 2.10 with a standard deviation of 0.65. The second class, which had the largest population of the three, had an average of 2.20 with a standard deviation of 0.37. The final class had an average of 2.30 with a standard deviation of 0.38. Overall the average for the entire program was 2.21 with a standard deviation of 0.46. The overall mark was comprised of the quiz result and participation (participation criteria found in Appendix 3). The overall average, out of 5, was 4.13 with a standard deviation of 1.48 (see Figure 1).

The data presented suggests that CBL is an effective teaching method at this level of education and professional development. All the averages presented include participants who were not present and received a mark of 0. The average participation mark was 2.33 with a standard deviation of 0.40. The average difference between participation mark and quiz mark was 0.13 (SD of 0.47). This suggests an association between superior performance participation and performance on the quiz. No correlation study was conducted.

The second set of data collected for CBL was the evaluation. This included 11 questions (of which two were binary)

Table 1 Frequency of marks for all three classes: Marks are a combination of participation mark and question mark (2.5 marks each) making the entire mark out of five.

	Average Mark (Standard Deviation)
Class 1	2.10 (0.65)
Class 2	2.20 (0.37)
Class 3	2.30 (0.38)
Overall	2.21 (0.46)

based on the students' opinions of the session. Out of 11 questions, nine were evaluated on a nominal scale of one to four. Of the eleven questions in the Appendix 5, three will be looked at in depth as they provide the most relevant data for the present subject of interest.

The first question asked was whether or not the SLM was read by the students. This question was extremely important to this study because the students would be learning new material and reading the SLM prior to the sessions would enable them to participate in the discussion with a greater knowledge set and understanding of the relevant material. It is crucial for students to have this background information to be able to engage in the case based learning sessions effectively. Of the two classes that answered this question, 54.7% of the students in the first class answered that they completed the reading compared to 91.3% in the second class. Professor involvement is a major factor in maintaining high compliance. Without proper mastery of the SLM, students put themselves at a major disadvantage for the session.

The second question to be analysed in this paper is question six, which asked if this type of integrated teaching was a beneficial learning tool. This is asking the perceived benefit of the program. It is useful to know if this type of teaching aided the students' understanding of core material and whether it encouraged conceptual learning and integration, as this was the ultimate goal of the project. The average for this question was 3.82 with a standard deviation of 0.41.

The third and final question is question 8, which asked the students' overall satisfaction with the CBL session. This was to determine if the students enjoyed the CBL sessions or not. This is where CBL attempts to set itself apart from traditional lecture methodology. With the students engaging each other they learn in a way that might be perceived as more interactive and enjoyable than the typical university teaching style. It was the hope of this study that this fact may make CBL a more attractive and novel teaching approach and that it would encourage its adoption within the faculty. The average response for this question was 3.80 with a standard deviation of 0.41.

The above data is subject to a number of biases and also relied on categorical data. Nonetheless, the data strongly supports the popularity and the use of the program. The SLM is the lowest scoring portion of the program. Out of the courses assessed for completion of the SLM, the course with the lower completion rate is also the higher level course of those examined. The marks for the quiz were above averages for the respective courses showing the effectiveness of CBL. The overall mark indicates the same findings. An analysis of the opinions of the students shows that participating students found the CBL to be an effective and enjoyable teaching tool.

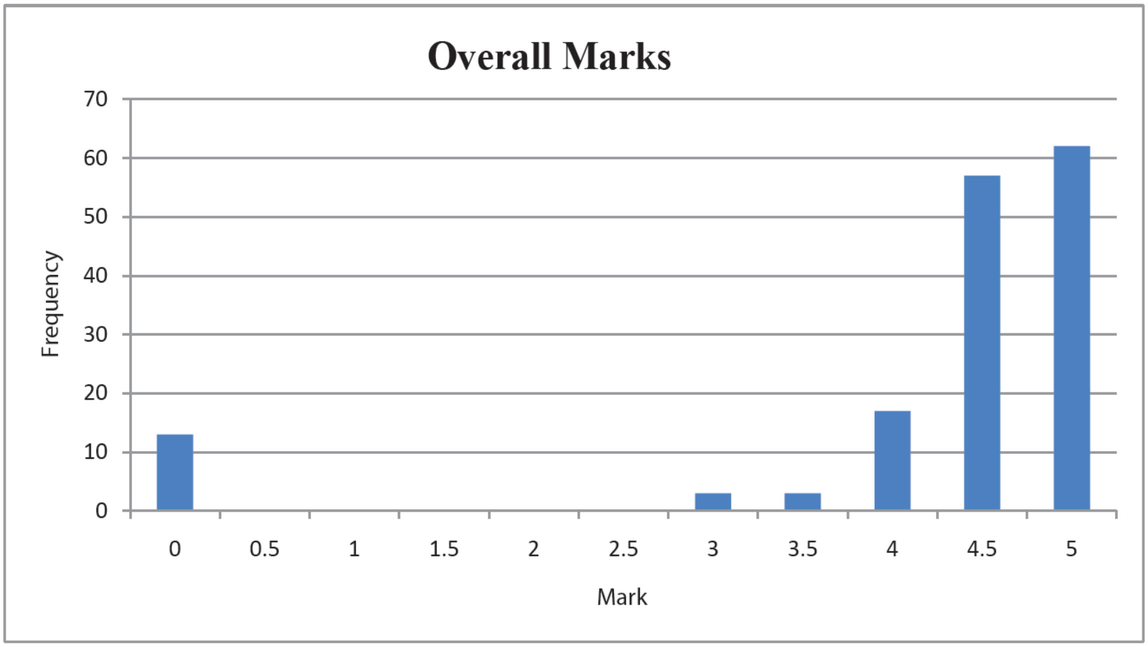

Figure 1 Frequency of marks for all three classes. Marks are a combination of participation mark and quiz mark (2.5 marks each) making the entire mark out of five.

Discussion

Feasibility of CBL implementation

The viability of implementing CBL sessions in health science courses is measured by the following parameters: (1) quiz marks; (2) students' preference; (3) students' evaluation of the facilitators and the program; and (4) financial resources of the Interdisciplinary School of Health Sciences.

The majority of students scored well on both discussion and quiz sections. The average grade out of 2.5 was 2.21 with a standard deviation of 0.46. The average of the three participating classes is relatively high and the standard deviation indicates minimum spread. The data suggests that CBL may be a viable teaching methodology that allows students to apply their knowledge with colleagues. Results of the questionnaires suggest that most health sciences students prefer to have CBL as a supplement to traditional lectures and course work. Interest is crucial to students' subjects of study; they may be motivated to learn and understand the material they feel is relevant, resulting in a better integration and conceptualisation of knowledge, CBL also prepares students for the problem-based nature of a career in health care and it encourages them to develop interprofessional skills (such as cooperation and communication) early on in their professional development. The material utilised in all aspects of the CBL was taken directly from the course material that makes up each course curriculum. As such, the CBL was directly relevant to the student's studies.

In addition, students gave positive evaluations to the facilitators' skills and the program as a whole. Facilitators' skills are an important part of the evaluation because they encourage students to think critically and steer the discussion in the appropriate direction. Thus, CBL may not only offer a style of learning which motivates students, the program also offers a necessary environment to conduct such learning experience. As the program operates on a volunteer basis, it requires minimal work on the part of the professors and low costs associated with printing quizzes and reserving facilities. The use of third year health sciences students allows the faculty to conduct many small class size sessions which promotes the opportunity for student discussion and engagement with the topics in discussion. Moreover, CBL provides senior health sciences students with an opportunity to contribute to the program by facilitating future sessions for first and second year students. For the two classes with available data regarding the use of the SLM, the lower level course demonstrated a much higher rate of completion. This may suggest that students at a higher academic level were not willing to complete the SLM reading when it was not required or tested upon. There is room for bias in this result as the question evaluating the use of SLM was self-reported. Results are high with an average of 3.82 out of 4 (with a standard deviation of 0.41). This question was used to assess students' perception of the CBL program and its integration in the health science program. The CBL facilitators were in the room at the time of evaluation which may have influenced participants' evaluations of the facilitators, thus suggesting an observational bias. Overall, the students' opinion of the program is favourable, as mentioned in the results. This indicates the students' enthusiasm for the CBL program as it compliments these and other courses in the Interdisciplinary School of Health Sciences.

Limitations

As a pilot project, this study contains several limitations that need to be addressed. This study lacks a control group. As such, confidence intervals could not be calculated. In addition, there were a significant number of students who chose not to read the SLM prior to attending their CBL sessions. The SLM is a crucial component to the CBL program as it provides students with the basic required knowledge to participate in the discussion. Failure to complete this assigned reading may have prevented optimal participation. Results of the quizzes may be negatively skewed, given that the quizzes entailed only a small number of questions in comparison to the amount of material conveyed. The study results, although rather persuasive, cannot be generalised to courses outside of the ones included in the pilot program. There were only six participating courses in both French and English out of a total of 48 courses available in the ISHS. Resources, both financial and material, were limited. For instance, the availability of rooms to conduct CBL sessions was restricted to evening reservations at a location not on main campus. This led to some transportation difficulties and a lack of punctuality. In fact, the most widely criticised issue of the program according to the evaluation was the location of the CBL sessions.

Conclusion

The results indicate that health sciences students participating in the CBL sessions benefitted from and enjoyed taking part in CBL to complement their studies. The post-session assessments had all participating students averaging above 80%, indicating an understanding of course material in an environment that promoted application and critical thinking. The evaluations suggest that the students felt that they learned and enjoyed the sessions overall. Several limitations have been considered. Financial resources and authority within the faculty would help overcome a majority of these limitations. Future programs based on this model would also benefit from more rigorous pre- and post-session assessments. Attendance could be improved by holding future sessions on the main campus. Further research would benefit from the use of control groups and more rigorous testing methods.

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Appendix 1

Introduction: Offer a Brief Description of CBL

- Offer a brief description of CBL
- Explain format and marking. Answer any questions regarding marking scheme.
- Some people may be worried about participation marks; explain that good participation does not involve incessant talking – it is about meaningful contributions and good listening skills

Learning Objectives

Case Presentation

- What is important on this slide?
- What is the significance of the fictional patient's age – what issues are age-specific?
- What does productive cough mean?
  - Patient has a "wet cough" (brings up mucus or other fluids)
- What is dyspnea?
  - Shortness of breath.
- If the patient tires easily, what could this be a sign of?
- What is the difference between mucoid and purulent? What does each one mean and why is the change from mucoid to purulent significant?
  - Mucoid cough is a cough that yields mucus.
  - Purulent cough yields pus.
  - The transition could indicate an infection.
  - Occasional tension in chest is a symptom for a variety of diagnoses. What are some of them? Considering the other signs and symptoms exhibited by this patient, what ones are likely?

Possible Causes

- Encourage group discussion
- Make a list of possible diagnoses or further required information, on the board. Each person can contribute to one item.

Medical History

- What is the significance of the long-lasting symptoms?
  - Prolonged wheezing and dyspnea are major criteria for lung diseases.
  - Indicate that the patient is not suffering from a seasonal bronchitis or cold.
- What are some of the symptoms and disease associated with smoking? What does being a smoker increase his risk for?
  - Emphysema, lung cancer, chronic bronchitis, asthma, coughing, dyspnea, wheezing, etc.
- What are some of the reasons for which the patient might wake up frequently in the night?
  - Polyuria (frequent urination).
  - Polyphagia and polydipsia (excessive eating and drinking).
  - Chronic pain.
  - Sleep apnea.
  - Note that in this case sleep apnea is the reason and that the first three are signs of diabetes.
- Why might this be the first time reporting to a physician? Why is this significant and what might have driven him to seek medical help?
  - Can explore sociology of health – limited access to physicians, reasons why someone may be unwilling to visit the doctor, etc.
  - Patient likely sought medical help because his symptoms became significantly worse/ interfered with daily routines or because a family member urged him to.
  - Since patient hasn't seen doctor, symptoms haven't been monitored or treated, so the condition has likely developed and worsened.

Social and Occupational History

- Why is the fact that he lived in urban locations relevant? What does this put him at greater risk for?
    - Exposure to carcinogens and pollution may put him at a higher risk for cancers and lung disease.
- Given that his spouse smokes, what risks can we say he's been exposed to?
    - Thirty years of secondhand smoke, which is adequate to cause emphysema.
- Is there anything significant in his occupational history?
    - Welding is a risk factor because particulate matter might be inhaled that could irritate lungs and increase risk of disease.
- What other occupations may increase risk of respiratory disorders?

Physical Examination: Vital Signs

- Is temperature normal? What is normal value for temperature? Why might the patient have a fever?
    - Normal temperature is 37.2 degrees Celsius.
    - Therefore, this patient has a slight fever – sign of infection.
- What is BMI and what are the various categories? Which one does our patient fall under? Given his BMI, is he at a greater risk for any diseases?
    - Less than 20 = underweight.
    - 20 – 25 = normal range.
    - 25 – 30 = overweight.
    - 30—35 = obese.
    - 35 and over = morbidly obese.
    - Patient is slightly overweight.
- What is normal blood pressure? Is this blood pressure anything to be concerned about?
    - Normal value is 120/80.
    - The patient is slightly hypertensive, but that is normal in a male patient this age and probably is not too concerning (but still worth noting).
- What is the normal rate of respiration? What can we say about our patient's respiration?
    - Normal values are 12-20 breaths per minute.
    - This patient is tachypneic.
- What are normal heart rates? Is the patient's heart rate a concern?
    - Normal values are 70-75 bpm, but this can vary considerably based on a number of factors.
    - This patient is slightly tachycardic.
- What is the fifth vital sign? In many hospitals, a sixth is also used – any idea what it might be?
    - Fifth vital sign is pain.
    - The sixth vital sign varies but often it is blood glucose or pupil size.
- What are rales? What might cause them and what might they indicate?
    - Rales are clicking, rattling, or clacking noises that can be heard in the lung using a stethoscope.
    - They can be coarse or fine (fine ones are higher pitched, less intense, and shorter).
    - The sound is made when fluid (mucus) collects in the peripheral portions of the lung, the alveoli collapse, and their walls stick together. When the patient attempts to inhale, the alveolar walls are forced to pop open and a crackling sound is heard during inspiration.
    - Can indicate pneumonia, bronchitis, collapsed lung tissue, etc.
- What is implicated by a longer expiration time?
    - Provoke questions about what would make it more difficult to get air out of the lungs.

  - The longer expiration time is because fluid in lungs (from chronic bronchitis) narrows the bronchi, therefore less air can be breathed out at once.
- What is meant by barrel chest? Why would someone have one?
  - A barrel chest is a broad, deep chest that is expanded outwards, as shown in the picture.
  - It is common in patients with emphysema. It happens because of air pocket accumulation inside the thoracic cavity and increased intrathoracic pressure that allows wall to naturally expand outward.
  - The person is having more trouble breathing so they must use all their accessory muscles.
- What does the coughing up of thick mucus indicate? How is it related to the rales?
  - Indicates inflammation and explains the rales (fluid in the lung causes the cracking sound).
- What other organs should be tested and why?
  - Answers might include the heart (complications of lung problems can include heart problems; also, some of the early symptoms included those of a heart attack), liver (fairly standard)
- What tests might you want to do next?
  - Lead to discussion of a sputum sputum test. They would want to do this because they should suspect some kind of an infection, along with more serious problems. This is done because it is suspected there is an infection, along with more serious problems.

Sputum Test

- How is a sputum test done
  - Patient coughs deeply and expels material that comes up from the lungs into a sterile cup.
  - The sample is placed in a medium where organisms can grow; a positive culture can identify organisms to help diagnose bronchitis, tuberculosis, a lung abscess, or pneumonia.
  - Mixed with animal cells, observe characteristic changes to the cel in order to identify the virus.
- What does Streptococcus pneumoniae cause? Is it gram positive or gram negative?
  - Gram positive (has a thicker layer of peptidoglycan membrane. Can cause a variety of infectious diseases including pneumonia and acute sinusitis.
- So the patient has an infection…but does this explain all the symptoms?
  - No!

Differential Diagnosis

- What is a differential diagnosis?
  - Systematic list of all possible diagnoses eliminate until you get the final diagnosis.
- Have them write their differential diagnosis on the board and explain each possible diagnosis.
- Ask for ideas about what further tests they might want to do or what information they will need to narrow it down.

ABG

- What is an ABG test and what is it used to measure?
  - Arterial Blood Gas test; uses blood from an artery.
  - Most common puncture site is the radial artery at the wrist.
  - It is used to determine the pH of the blood, the partial pressure of carbon dioxide and oxygen, and the bicarbonate levels.
  - Mainly used in pulmonology to determine gas exchange levels in the blood (related to lung function).

Results for ABG

- What do you notice about the pH of the blood? What is meant by acidosis and alkalosis?

  - pH higher than 7.45 = alkalosis
  - pH lower than 7.35 = acidosis
  - Our patient's pH is significantly lower than normal levels, which means he has acidosis.
- How is pH linked bicarbonate ion and carbon dioxide? How do acidosis and alkalosis occur?
  - The formula represents the blood buffer system, which is responsible for regulating blood pH.
  - Acidosis results from a build-up of carbon dioxide in the blood – hence the elevated carbon dioxide levels.
  - Alkalosis results from a loss of carbon dioxide (often caused by hyperventilation).
  - To compensate for the increase or decrease in carbon dioxide, there are metabolic mechanisms; the reverse happens. Think about Le Chatelier's principle and use the formula.
- What is the difference between respiratory and metabolic acidosis? Which does our patient probably have?
  - Respiratory acidosis or alkalosis is caused by various problems in the lungs, while metabolic is caused by metabolic disorders that result in an imbalanced pH.
  - Given that he has lung disease, our patient probably has respiratory acidosis.
  - One key way to determine whether the acidosis is respiratory or metabolic is that in respiratory acidosis, the CO_2 is increased while bicarbonate is either unchanged or increased. This matches our patient's ABG results, so he has respiratory acidosis.
- Why would he have respiratory acidosis?
  - The build-up of carbon dioxide makes sense if he has lung disease....air is trapped in lungs, can't exit as quickly, etc. so it has a high proportion of CO_2 in it.

Imaging Techniques

- What is an X-ray and when is it used?
  - Due to differences in composition, the lungs and the bones of the chest can be distinctly visualised
  - White shadows on X-ray represent more dense or solid tissues such as bone.
  - Darker shadows represent air-filled tissues, such as lungs.
  - X-ray radiation is absorbed by solid tissues (such as bone) and therefore white shadows are obtained whereas the lung absorbs very little so the X-ray beams pass through and make darker shadows.
  - Note: For COPD (Chronic Obstructive Pulmonary Disease), should find hyper-inflated lungs with flattened diaphragm, hyperlucent lungs (greater than normal blackening), central pulmonary artery enlargement, bullae (areas of destroyed lung tissue create large, dilated air sacs).
- What is PET (Positron Emission Technology) scan and when is it used?
  - Uses short-lived radioactive substances to produce a 3-D coloured image of those substances in the body
  - Studies metabolic activity or body function.
  - Used mainly in cardiology, neurology, and oncology.
  - Patient receives a short half-lived radiopharmaceutical (therefore patient doesn't receive a high amount of radiation…it is about the same as two chest x-rays)
  - Radiopharmaceuticals discharge positrons and as they encounter electrons within the body, a reaction producing gamma rays occurs.
  - Radiopharmaceuticals contain a chemical commonly used by the body so one can view metabolic processes (ex: glucose with radioisoptope to see glucose consumption in a tumor).
- What is a CT (Computed Tomography) scan and when

is it used?

  - An x-ray procedure that combines many x-ray images using a computer to generate cross-sectional views of internal organs and structures of body.
  - Used to define normal and abnormal structures in the body and/or assist in procedures by helping to accurately guide the placement of instruments or treatments.
  - Note: CT scan could be used to assess COPD, but it is not cost-effective and is not usually done, because x-ray and spirometry are adequate.

- What is microscopy and why would it be used?
  - Examine microbes under a microscope.
  - In this case, use it to test for the infection
- What is spirometry and what is it used for?
  - Used to test the air capacity of lungs.
  - Breathe into a mouthpiece that is connected to a spirometer.
  - Patient breathes and then exhales into sensor as hard as possible for as long as possible.
  - Test is usually repeated at least three times to ensure accuracy and reproducibility.
  - Can only be used on people who are able to understand and follow the instructions (aka can't use on young children or severely mentally handicapped).
- Which of these techniques should we use for the patient?
  - X-ray, spirometry, and microscopy (the sputum test is completed at that stage, and there may be no need for).

Spirometry Graph

- What does the graph show us?
  - Curves for people with restrictive, obstructive, and normal lungs.
- What is obstructive lung disease versus restrictive disease? What might cause each one?
  - Obstructive lung disease is when the bronchial tubes become blocked or narrower and consequently, expiration is difficult. Narrowing is often due to infections or pathologies that cause fluid build-up in the lung.
  - Causes of obstructive lung disease include COPD, chronic bronchitis, asthma, pneumonia
  - Restrictive lung disease is when lungs cannot expand completely and are stiff (scar tissue and air pockets).
  - Causes of restrictive lung disease include scarring of lungs and emphysema.
- What are FEV1, FVC, and FEV1/FVC?
  - FEV1 = Forced expiratory volume in first second (how much air can they blow out in one second)
  - FVC = Forced vital capacity (how much air can they blow out in total).
  - FEV1/FVC = Ratio of the two; in normal people it is 75 – 85% depending on age, height, weight, health status, ethnicity, etc.
  - The first two are measured in litres, third is measured as a decimal or percentage.
- What do you observe on this graph?
- How do the different pathologies explain the trends seen on the graph?
  - OBSTRUCTIVE: The forced vital capacity does not change; the person can breathe out the same amount of air as before, but it takes them much longer to do it because the bronchial tubes are blocked. This accounts for the lower FEV1 and the resulting lower FEV1/ FVC%.
  - RESTRICTIVE: The lungs are stiff and there is air trapped in them that cannot be expired. Therefore, the forced vital capacity is lower. There is nothing blocking the bronchial tubes however, so the FEV1 is normal (but it does have

  - a lower absolute value than normal, because there is less air to blow out). The lower FVC and relatively normal FEV1 cause the FEV1/FVC ratio to be relatively high.

Spirometry Results

- Based on the values given in the previous slide, what type of lung disease does our patient have?
  - Mainly obstructive, but note that the FVC is lower than normal, so he has some restrictive lung disease as well. This finding is a major "key" to the fact that it is COPD.
- What is ventolin? If the patient's values do not change when he is given this, what does this indicate?
  - Ventolin is frequently given to asthmatics as a sympathomimetic and in an asthmatic, it would improve their FEV1/FVC percentage. However, in our patient it does not, so we can rule out asthma.
  - Note: COPD damage is irreversible, so generally ventolin (or similar drugs) will not work. In a small percentage of COPD patients, these drugs may increase FEV1 slightly (suggesting that they also have some asthma?).
- Based on these findings, can you rule out any diagnoses or lean towards others?

Imaging Results

- What differences do you notice between the X-rays?
  - In patient, there is a flattened diaphragm, hyperinflation, increased AP diameter, thick mucus in lungs, and thickened central pulmonary artery.
- Think about the implications…is this purely obstructive or purely restrictive?
  - No. There are elements of both.

Pink Puffer versus Blue Bloater

- Which one is associated with restrictive and with which obstructive?
  - Pink puffer is associated with restrictive lung disease; the lungs are stiffer (from the air pockets present in walls) and it is harder for them to expand and contract. Consequently, the person must work much harder to breathe (use accessory muscles, pursed-lip breathing, leaning forward). They are thin and more muscular because of this constant exertion. Cough is absent because unlike obstructive, they do not have mucus in lungs.
  - Blue bloater is associated with obstructive lung disease; there is mucus in the lungs and bronchial tubes are clogged. This inflammation is associated with the excess body fluids and the cough (trying to bring up mucus). It is difficult to breathe because of blockages and narrowing, so there is dyspnea on exertion.
- What are some diseases associated with each?
  - Emphysema, scarring of lung tissue associated with restrictive.
  - Asthma, pneumonia, bronchitis associated with obstructive.
  - COPD is primarily obstructive, but also restrictive (depends on relative severity of the emphysema and chronic bronchitis).

Final Diagnosis

- Students discuss possibilities and come to conclusion that it is COPD. Bring up key points that point towards this diagnosis.

Final Diagnosis: COPD with chest infection

- How was this conclusion arrived at? How were other diagnoses ruled out?
  - Students should be able to link the symptoms and test results to COPD. Some key points are detailed briefly below.
  - Epidemiological points: COPD is more common in males but only because more males smoke (historically), Occupational history and smoking

are critical indicators that he is at risk for COPD.

  - Symptoms related to chest infection: sputum becoming purulent, fever (although COPD is associated with transient fever), the positive sputum test.
  - Long-term development of symptoms; dyspnea, barrel chest, etc.
  - Talk about restrictive versus obstructive disease; how the spirometry and pink puffer/ blue bloater indicated that our patient was obstructive and slightly restrictive, pointing towards COPD.
  - For ABG, respiratory acidosis (and not alkalosis) because air trapped in the lungs, poor ability to expire, etc would cause increased CO2. It wouldn't be very plausible for a COPD patient to have alkalosis...hyperventilation isn't likely for someone with obstructive lung disease.

Pathological Findings

- What differences do you notice about emphysema and bronchitis? Which can be considered restrictive and which is obstructive?
- Ensure students understand what each disease is and that the combination of the two is COPD.

Possible Complications

- What are some likely complications?
- What is meant by each of the complications? How might these happen?
  - Cor pulmonale = enlargement/weakness of the right ventricle caused by a respiratory disorder. Chronic cor pulmonale tends to cause hypertrophy of right ventricle (muscle cells grow larger to push the blood against increased resistance), whereas acute cases often cause dilation (ventricle stretched out to accommodate pressure changes) instead. Both are caused by increased pressure in right ventricle. Heart failure can result if untreated. Treat underlying cause.
  - Secondary polycythemia = increase in the proportion of RBCs in the blood. Caused by increased RBC production (absolute polycythemia) or decreased plasma levels (relative polycythemia). Secondary polycythemia caused by increases in production of erythropoietin (hormone controlling RBC production), leading to an increased production of erythrocytes). Normal adaptation at high altitudes or for diseases like COPD.
  - Bullous lung disease = formation of bullae (air-filled wall tissue in lungs) so lung can't expand or contract fully. Leads to shortness of breath and infection. Treat with surgery or steroids.
  - Pulmonary hypertension = increase in blood pressure in pulmonary artery, pulmonary vein, or capillaries leading to dyspnea, fainting, and dizziness. Exacerbated by exertion. Caused by vasoconstriction of blood vessels connected to lungs, making it harder for heart to pump blood through lungs.
  - Malnutrition – dyspnea makes it difficult to eat and COPD patients often lack an appetite but require 10 times the calories of a healthy person. Consequence of malnourishment is lack of energy and worsened dyspnea.
  - Pneumothorax = air enters pleural cavity. COPD patients have weaker lungs that are more vulnerable to tears/holes.

General Treatment Measures

- What are some important treatment measures that should be taken? What is the single most important one?
  - Smoking cessation is the most important.
  - Reversible bronchospasms should be treated.
- Explain what each treatment measure involves?
- Why is each important?
  - Adequate hydration helps to keep mucous thin and easier to cough up

  - Pulmonary rehabilitation is physiotherapy and education that helps patients develop stronger accessory muscles to assist in breathing, clear mucus, etc.
  - Vaccinations for seasonal influenza (flu worsens symptoms of COPD), pneumovax (to prevent pneumonia, which COPD patients are at higher risk for).
- What is pulmonary hygiene?
  - A set of methods used to clean mucous and secretions from the airways to prevent respiratory secretions (suctioning airway, analgesics, coughing, percussion, proper positioning, etc).

General Treatment Measures Continued

- When would surgical intervention be necessary?
  - Only considered if the usual treatments don't relieve symptoms and quality of life is poor.
  - High risks associated with lung surgeries.
- What is lung volume reduction surgery? When would a lung transplant be done?
  - Lung volume reduction = 20-30% of the top portion of lung is removed (this is usually the most damaged area) so air can move more freely through the lung and decrease COPD symptoms. Controversial procedure.
  - Lung transplant is only recommended for advance stage patients who will die without it and are no longer smokers.
- What diet considerations are important for a COPD patient?
  - Low sodium (otherwise, body becomes dehydrated and breathing is difficult), avoid alcohol (suppresses breathing), high protein (improves appetite and is more substantial for people who have trouble eating), high caloric intake (to compensate for calories lost in use of accessory muscles to breathe).

Medications

- What are corticosteroids used for?
  - To treat inflammatory conditions that ma affect joints, skin, digestive tract, respiratory system, eyes, and ears. In this case, they are given orally.
  - Work by blocking production of substances such as prostaglandins which trigger inflammation in the body; also partially suppress certain components of immune system.
- Why would there be inflammation?
  - Inhaled irritants cause inflammation as the result of neutrophil activity, T lymphocyte, and macrophage activity. Hyperplasia and hypertrophy of glandular tissue occurs and there is increased mucus production which plugs the bronchi.
- What role do the corticosteroids play in the treatment of COPD?
  - Liquefy mucus and reduce swelling in breathing tubes.
  - Note that not all patients respond to them.
- What does theophylline do and when should it be used?
  - Relaxes muscles surrounding breathing tubes and widens them to ease breathing.
  - However, it is toxic and therefore used only as a last resort.
- What are sympathomimetics?
  - Andrenergic agonists which produce symptoms of flight-or-fight response and stimulate sympathetic nervous system. Result is bronchodilation. Some adverse effects though.

Other Recommendations

- What recommendations would you give the patient about his environment?
  - Avoid secondhand smoke and retire asap.

  - Avoid cold, dusty, or damp environments.
- What would rehabilitation programs entail?
  - Breathing exercises to improve function of diaphragm, strengthen muscles, improve gas exchange, conserve energy, and relax breathing.
- What types of exercise would you recommend to the patient?
  - Aerobic exercise programs, such as walking to improve exercise tolerance and ultimately reduce dyspnea.
- Why avoid traveling at high altitudes?
  - Lower level of oxygen would cause extreme hypoxemia and more profound dyspnea.
- Anything else?
  - Oxygen therapy.

Prognosis and Follow-Up

- What are some important indicators of prognosis?
  - Age, smoking status, FEV1 values, poor response to bronchodilator therapy, severe hypoxemia, development of complications.
- Why is a follow-up necessary? Think about the nature of the disease (irreversible!)
  - If very progressive, more advanced therapy will be needed. Otherwise, should be seen monthly if severe or biannually when stable.
- Why would a patient require nocturnal oxygen?
  - If he has severe dyspnea.

Evaluation

- Individual completion of the quiz and evaluations.

Appendix 2

Health Problems (Winter 2010) CBL- Self-Learning Module

Basic Physiology of the Respiratory System

The respiratory system obtains oxygen from the external environment and delivers it to the blood for distribution throughout the body.

The passageway from external to internal is as follows: nasal/oral cavity -> pharynx -> trachea -> Larynx -> bronchi -> bronchioles -> alveoli.

The branching structure, which includes the bronchi and bronchioles, is known (quite literally) as the bronchial tree. The terminal end of the resp. system, the alveoli, is where gas exchange occurs.

Alveoli are thin-walled sacs surrounded by blood capillaries and are the site of gas exchange. Air that is inspired diffuses into the blood and the hemoglobin portion of erythrocytes (red blood cells) becomes saturated with oxygen. Carbon dioxide diffuses in the opposing direction from the blood to the alveoli in order to be expired. This is the basis of the cellular respiration.

Pathophysiology of the Respiratory System

Asthma: Inflammation of the small airways that carry air in an out of the lungs, which can cause wheezing, coughing and difficulty in breathing.

COPD: A disease in which the airways and tiny air sacs inside the lungs are partially obstructed or destroyed. The result is labored breathing. This disease may occur when a person breathes in lung irritants of some kind.

Emphysema: An irreversible chronic lung disease in which the alveoli (small air sacs in the lung) become damaged; smoking is the most common cause of emphysema.

Bronchitis: An inflammation of the mucous membranes of the bronchial tubes, causing a persistent cough that produces considerable quantities of sputum.

Pleurisy: Inflammation of the pleura (membrane lining of the throat between the lungs and abdomen) characterized by fever, painful and difficult breathing, and a dry cough.

Pneumonia: An inflammation of one or both lungs that is frequently but not always due to infection. The infection may be bacterial, viral, fungal or parasitic. Symptoms may include fever, chills, cough with sputum production, chest pain, and shortness of breath.

Tuberculosis: An infection transmitted by inhalation or ingestion of tubercle bacilli that is manifested in fever and small lesions called tubercles (usually in the lungs but in various other parts of the body in acute stages).

Terminology and Definitions

FVC – Forced Vital Capacity – after the patient has taken in the deepest possible breath, this is the volume of air, which can be forcibly and maximally exhaled out of the lungs until no more can be expired. FVC is usually expressed in units called liters. This PFT value is critically important in the diagnosis of obstructive and restrictive diseases.

FEV1 – Forced Expiratory Volume in One Second – this is the volume of air, which can be forcibly exhaled from the lungs in the first second of a forced expiratory maneuver. It is expressed as liters. This PFT value is critically important in the diagnosis of obstructive and restrictive diseases.

FEV1/FVC – FEV1 Percent (FEV1%) – This number is the ratio of FEV1 to FVC – it indicates what percentage of the total FVC was expelled from the lungs during the first second of forced exhalation – this number is called FEV1%, % FEV1 or FEV1/FVC ratio. This PFT value is critically important in the diagnosis of obstructive and restrictive diseases.

FEV3 – Forced Expiratory Volume in Three Seconds – this is the volume of air, which can be forcibly exhaled in three seconds – measured in Liters – this volume usually is fairly close to the FVC since, in the normal individual, most of the air in the lungs can be forcibly exhaled in three seconds.

FEV3/FVC – FEV3% – This number is the ratio of FEV3 to the FVC – it indicates what percentage of the total FVC was expelled during the first three seconds of forced exhalation. This is called %FEV3 or FEV3%.

PEFR – Peak Expiratory Flow Rate – this is maximum flow rate achieved by the patient during the forced vital capacity maneuver beginning after full inspiration and starting and ending with maximal

FEF – Forced Expiratory Flow – Forced expiratory Flow is a measure of how much air can be expired from the lungs. It is a flow rate measurement. It is measured as liters/second or liters/minute. The FVC expiratory curve is divided into quartiles and therefore there is a FEF that exists for each quartile. The quartiles are expressed as FEF25%, FEF50%, and FEF75% of FVC.

MVV – Maximal Voluntary Ventilation – this value is determined by having the patient breathe in and out as rapidly and fully as possible for 12 -15 seconds – the total volume of air moved during the test can be expressed as L/sec or L/min – this test parameter reflects the status of the respiratory muscles, compliance of the thorax-lung complex, and airway resistance. Surgeons like this test value because it is a quick and easy way to assess the strength of the patient's pulmonary musculature prior to surgery – a poor performance on this test suggests that the patient may have pulmonary problems postoperatively due to muscle weakness. MVV can therefore be viewed as a measure of respiratory muscle strength. One major cautionary note is that this test is effort dependent and therefore can be a poor predictor of true pulmonary strength and compliance.

Appendix 3

Pass/Fail Evaluation of Case Based Learning

Passing Criteria

- The student shows up on time and well prepared to the case based learning session.
- The student shows respect and regard to peers and the facilitator throughout the session. Offensive language will not be tolerated and will result in the removal of the student from the session and a consequent failing grade.
- The students shows cooperation and commitment to the group's overall goals.
- The student actively searches for the answers to the problems.
- The student participates throughout the discussion and contributes to the problem solving process.
- The student meets all the learning objectives designed by the professor.

- The student follows the case based learning process which starts from the introduction and ends in conclusion and ending questions.

- The student completes the session evaluation of the facilitator

- The student stays for the entire CBL session.

- The Student Identifies the core issues in a timely manner.

- The student asks for appropriate help from the facilitator or Professor in the event of a problem.

Failing Criteria

- Absence of greater than 5 minutes results in a fail mark

- Offensive language will not be tolerated and will result in the removal of the student from the session and a consequent fail.

- The Student does not participate in the group discussion.

- The student is distracting and does not cooperate with the group.

- The student is unorganized and did not prepare for the session.

- The Student does not follow the case based learning process which starts from the introduction and ends in conclusion and ending questions.

- The student does not meet the learning objectives.

- The Student is constantly talking and does not allow others to comment or participate in the discussion.

- The Student does not Identify the core issues and is constantly distracted.

Appendix 4:

Health Problems CBL Quiz

1. What FEV1/FVC% value would be consistent with severe COPD?

A) 20%
B) 60%
C) 75%
D) 100%

5. Where is COPD most prevalent?

A) Women
B) Men
C) Men and Women equally
D) Children

10. Which one of these is not one of the possible complications of COPD?

A) Respiratory Infection
B) Pneumothorax
C) Cor Pulmonale
D) Pleurodesis

11. What is the normal respiratory rate range?

A) 10 – 15 breaths/minute
B) 12 – 20 breaths/minute
C) 15 – 30 breaths/minute
D) 20 – 25 breaths/minute

21. What conditions are associated with COPD?

A) Bronchitis
B) Emphysema
C) Asthma
D) A and B

Appendix 5:

Seminar Facilitation Evaluation

Student Facilitators:

1. _______________ 2. _______________

Rating: Poor (1) Satisfactory (2) Very Good (3) Superior (4)

Have you read the self-learning module? Yes No

1. Facilitation Skills: (1) (2) (3) (4)

Facilitators ask questions and use strategies that draw out knowledge of theory/experience; facilitators are knowledgeable and offer correction and guidance when necessary.

2. Organisation: (1) (2) (3) (4)

Seminar is structured in a clear and logical sequence.

3. Originality: (1) (2) (3) (4)

Visual and written aids are interesting, innovative/ creative and helpful.

4. Engagement: (1) (2) (3) (4)

Facilitators generate a high degree of student interest; respectful and inclusive; all students are encouraged to participate.

5. Discussion: (1) (2) (3) (4)

Discussion is focused, relevant and engaging; theory (readings) related to experience; application and implications clear and accurate.

6. Experience: (1) (2) (3) (4)

Participation in this exercise increased understanding of overall theoretical concepts; integrate previously acquired knowledge; complement the theoretical portion on the class.

7. Self-learning module: (1) (2) (3) (4)

The self-learning module was helpful in enhancing ability to participate actively in discussion during the session.

Seminar Improvements

1. Overall Satisfaction: (1) (2) (3) (4)

Rate the level of satisfaction with the seminar in combining theoretical concepts and practical problem solving.

2. Effectiveness: (1) (2) (3) (4)

Rate the effectiveness of the seminar to complement theoretical concepts acquired in the class.

3. How would you improve the CBL experience?

4. Do you think that this seminar should be offered as a component of fourth year courses, in order to integrate all previous knowledge?

5. Would you recommend this CBL seminar to be offered in other Health Sciences courses?

6. Is the seminar helpful only to someone who wants to become a medical doctor? Can you think of other Health Science-oriented careers where CBL seminars are useful?

7. How would you improve the seminar?

APPEL À CONTRIBUTIONS

Les critères de soumission se basent sur les douze déterminants de la santé, tels que définis par Santé Canada et l'Agence de santé publique du Canada. Idéalement, toute personne qui souhaite soumettre un manuscrit à la RISS devrait clairement identifier quel déterminant de la santé est associé à sa recherche, ainsi que la nature de cette relation : *de quelle façon le sujet à l'étude est-il relié à la santé humaine, à travers le déterminant de la santé choisi ?*

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