Community-pharmacy based screening of hypercholesterolemia in children, young or adult people

Children and Adult Program To CHolesterolemia Assessment (CAPTCHA) - English

Pesquisa de Hipercolesterolemia Infantojuvenil en la oficina de farmacia (PHI) - Español

Summary

The prevalence of cardiovascular diseases has increased in the last decades, both in developed and developing countries, and it has become one of the leading causes of death. The most important risk factors, such as hypertension and hypercholesterolemia, also increased in prevalence, but there has been a stabilization in average values due to the increase in diagnosis and access to medicines over the last twenty years. Until not many years ago, both these diseases and their risk factors were associated exclusively with the adult population. The discovery of atherosclerosis in adults who died at an early age in the middle of the last century expanded the focus of research towards the search for hypercholesterolemia in children.

The results showed a significant prevalence that increased with age, inadequate diet, sedentary lifestyle, physical inactivity, high blood pressure and other well-established risk factors. Cardiovascular risk factors may be present since early childhood. However, hypercholesterolemia has a greater impact and is more difficult to detect. Prevalence rates between 6 and 15% have been found in our country, Argentina.

The universal screening of cholesterol levels is not feasible. The screening strategies employed have a high rate of false positives and represent a high cost in economic and human resources. The genetic basis of hypercholesterolemia is very strong, so transmission of this phenotype from parents to children is expectable. In addition, socio-cultural characteristics such as eating habits and physical activity may affect hypercholesterolemia either positively or negatively. Both factors reinforce the hypothesis of familial hypercholesterolemia.

A research project in the town of Jovita in 2015 showed that the strength of association of high cholesterol levels between parents and their children is very high, which makes it an excellent screening criterion. A patient entering the pharmacy with a prescription for medicines to treat hypercholesterolemia is an individual who has been diagnosed as having high cholesterol levels. Considering the above, the children of these patients have a high probability of having hypercholesterolemia too. The analysis in these conditions becomes an appropriate research strategy.

A pilot study conducted in four pharmacies in Jovita, with patients who filled their prescriptions there and involving the verification of cholesterol levels in the medical records of their blood relatives revealed that 60% of adults and 60% of children had moderate to high cholesterol values.

To put it briefly, the early screening of this condition would make it possible to implement strategies aimed at controlling hereditary hypercholesterolemia in this population, and hence reducing the mortality associated with cardiovascular diseases.

The present work firstly proposes the investigation of hypercholesterolemia in pediatric patients whose parents (one or both) suffer from this condition, and whose identification takes place at the pharmacy. Secondly, the project proposes further screening of other blood relatives of these patients. Additionally, we propose the engagement of the newly diagnosed hypercholesterolemia patients and their family in an educational intervention.

Finally, to address the need to diagnose familial hypercholesterolemia, the pharmacist could perform the Simon Broome Score or the Dutch Lipid Clinic Network Score (depending on the country) and send that information to the appropriate organizations, so that these patients can be followed-up, if applicable.

GOALS:

- Detecting hypercholesterolemia in the pediatric or adult population using hypercholesterolemia in their parents as a predictive factor.

- Detecting hypercholesterolemia in any patient who enters the pharmacy and who, in an interview with the pharmacist, reports having hypercholesterolemia patients among their blood relatives.

- Developing and implementing an educational campaign to stabilize or reverse the prevalence of hypercholesterolemia in children and young people.

- Carrying out the Simon Broome Score test or the Dutch Lipid Clinic Network Score test to contribute to the screening of familial hypercholesterolemia.

- Promoting the role of the pharmacist in primary health care.

DESIRED IMPACT

The impact of this project- idea will depend on the efforts for its development and further implementation.

It has considerable potential since two of its goals: early diagnosis of hypercholesterolemia in children and young adults and, detection and record of Familial Hypercholesterolemia, have raised interest of important referents of the national and international medical community. Some of them are:

- Dra. María Beatriz Araujo, Pediatrician, head of the last Lipids consensus in pediatrics of the Argentina Society of Pediatrics. Project Advisor.
- Dr. Pablo Corral, Vice President of the Argentina Lipids Society. Project Advisor.

Support letters issued by:

- Dr. Stephen Daniels, Pediatrician. Head of the recent Hypercholesterolemia in children consensus in the U.S.
- Dr. Raúl Santos, President of the International Atherosclerosis Society.
- Dr. Pedro Mata, President of Fundación Hipercolesterolemia Familiar of Spain.

FCQ Facultad de Ciencias Químicas | UNC Universidad Nacional de Córdoba | Pesquisa de Hipercolesterolemia Infantojuvenil | CAPTCHA Children and Adult Program To CHolesterolemia Assessment | PIPES Programa Interinstitucional de Prevención y Educación en Salud "Dr. Alberto Lubetkin"

University of Colorado School of Medicine

Stephen R. Daniels, MD, PhD
Professor and Chair
Department of Pediatrics
University of Colorado School of Medicine
Pediatrician-in-Chief
L. Joseph Butterfield Chair
Children's Hospital Colorado
13123 East 16th Avenue, Mail Stop B065
Aurora, CO 80045
Office: 720-777-2715
Fax: 720-777-7278

November 29, 2018

Jorge Robledo, PhD
Director del Programa Interinstitutional
de Prevención y Educación en Salud (PIPES)
Bioquímico y Farmacéutico
Doctor en Ciencias de la Salud
Alem 297
6127 Jovita (Cba.) Rep. Argentina

Dear Jorge,

I am writing this letter in support of your project to better assess cholesterol levels in children and adults. As we have discussed, identifying children with high LDL-Cholesterol, especially those with familial hypercholesterolemia, is very important. We know that these individuals are at high lifetime risk of cardiovascular disease and that their LDL-C can be lowered to reduce their risk. Because cholesterol elevation is asymptomatic, it is important that we have approaches to screening that will work to identify them.

Your proposal PHI (Spanish) CAPTCHA (English), which engages pharmacists in the effort to improve screening, is novel and has promise to improve screening by including the pharmacist as a member of the healthcare team. I think this has the chance to work quite well in countries where pharmacists are independent in their practice and are able to work to improve primary care. It appears that this may work well in Argentina, Great Britain, and Spain.

Good luck with your research proposal. I look forward to hearing about your progress in this very important effort.

Sincerely,

Stephen R. Daniels, MD, PhD

5660

Children's Hospital Colorado

December 28, 2018

Reference letter to support
The Project of
Jorge Robledo PhD
Inter-Agency Program for
Health Prevention and Education (Programa Interinstitucional
de Prevención y Educación en Salud, PIPES), Jovita, Córdoba, Argentina.

To whoever it may concern

On this letter I'd like to recognize the clinical and scientific value of the project designed and being developed by Dr. Jorge Robledo and colleagues. The PHI or CAPTCHA project tries to engage pharmacists on the diagnosis of dyslipidemias, especially Familial Hypercholesterolemia (FH) in children and their first-degree relatives. FH affects 1/250 individuals and is extremely underdiagnosed and consequently not adequately treated. The early diagnosis and treatment will certainly impact on natural history of cardiovascular diseases in those individuals. The project of Dr. Robledo if successful may serve as a model to be disseminated to other regions and countries of the world specially developing countries.

Sincerely

Prof. Raul D. Santos MD, PhD
Director Lipid Clinic Heart Institute-University of Sao Paulo Medical School Hospital
President Elect International Atherosclerosis Society
Sao Paulo, Brazil
Raul.santos@incor.usp.br

Unidade Clínica de Lípides
Av. Dr. Enéas de Carvalho Aguiar, 44 – Cerqueira Cesar – São Paulo – CEP 05403-000
Fone (5511)2661-5320 – Fax: (5511) 2661-5017, Brazil

FUNDACIÓN
HIPERCOLESTEROLEMIA
FAMILIAR

General Álvarez de Castro, 14 – 1º E 28010 – MADRID
www.colesterolfamiliar.org E-mail: Info@colesterolfamiliar.org
Tel.: 91 504 22 06 – 91 557 00 71

Madrid, 17 de Junio de 2019

D. Jorge Robledo PhD
Director del Programa Interinstitucional de Prevención y Educación en Salud (PIPES)
Alem 297. 6127 Jovita, Córdoba, Argentina.

Apreciado Dr. Robledo:

Me gustaría que esta carta sirva para apoyar y reconocer el valor social y sanitario del proyecto diseñado y desarrollado por usted y sus colaboradores. El novedoso proyecto PHI por su importancia, requiere el compromiso de los farmaceúticos en la detección de las hiperlipemias, especialmente de la Hipercolesterolemia Familiar (HF) en los niños y sus familiares de primer grado. La HF es un trastorno genético frecuente que afecta a 1/250 personas y cursa con niveles elevados de colesterol y enfermedad cardiovascular prematura.

Sin embargo, la mayoría de los pacientes con HF están sin diagnosticar y por tanto no adecuadamente tratados. La HF es un problema de Salud Pública y su diagnóstico y tratamiento deben ser una prioridad en la agenda política de los Sistemas de Salud.

El proyecto PHI debería servir como un modelo, que incluya tanto a los médicos como a los profesionales de la farmacia para mejorar el cuidado de las familias con HF. Su implementación podría resultar ser de gran utilidad en numerosos países.
Un cordial saludo

Pedro Mata MD, PhD
Presidente de la Fundación Hipercolesterolemia Familiar
Presidente de la Asociación de la Red Iberoamericana de HF

Our team is integrated by the following professionals:

Jorge Alberto Robledo
Pharmacist- Biochemist - Dr. of Health Science.
Freelance Researcher - Head of PIPES: Programa Interinstitucional de Prevención y Educación en Salud. (Health Education and Prevention Interinstitutional Program)
E-mail address – pipes.jovita@gmail.com - Phone Number +549 3385 590403

Juan Pablo Real
Pharmacist- Dr. of Chemical Sciences
Supervising Professor.
Postdoctoral Fellow - UNITEFA –CONICET
E-mail address: real.juanpablo@gmail.com - Phone Number: 0351-5353865 int: 5336 5336

Santiago Daniel Palma
Pharmaceutic - Biochemist - Dr. of Chemical Sciences
Associate Professor. School of Chemical Sciences. National University of Córdoba.
Conicet's Main Researcher. UNITEFA Director - UNC/CONICET
Appointed foreign member of the Royal Academy of Pharmacy. - (September 2020)
e-mail address: sdpalma@unc.edu.ar - Phone Number: 0351-5353865 int: 5336 53363