



ISSN NO. 2320-5407

Journal Homepage: - www.journalijar.com

INTERNATIONAL JOURNAL OF ADVANCED RESEARCH (IJAR)

Article DOI: 10.21474/IJAR01/12129
DOI URL: <http://dx.doi.org/10.21474/IJAR01/12129>



RESEARCH ARTICLE

POTENTIAL ADVANTAGES AND BARRIERS OF POLYPILL AND CARDIOVASCULAR RISK: A NARRATIVE REVIEW

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Manuscript Info

Manuscript History

Received: 05 October 2020

Final Accepted: 10 November 2020

Published: December 2020

Key words:-

Polypill, Cardiovascular Risk, Prevention

Abstract

Comprehensive approaches are followed in chronic disease prevention. Polypharmacy or using fixed dose combination of polypill is an element under the comprehensive approach. This narrative review is carried out in intent to summarise the potential advantages and barriers of using Polypill in cardiovascular risk prevention. There is potential to benefit the high risk group for non communicable diseases in terms of primary prevention but secondary prevention is not certainly indicated. Available Drugs are noted.

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Introduction:-

Chronic non-communicable diseases are prolonged to be with individual. Not a single medicine work instead combination drugs are needed for pharmacotherapy. Such fixed dose combination therapies are called polypharmacy. In last two decades, for cardiovascular risk reduction Polypills are recommended with support of numbers of evidences. Polypills are nowadays used for primary prevention of Cardiovascular diseases, Diabetes, Hyperlipidemia, Arthritis etc¹.

History of Polypill:

In 2003, Wald and Law proposed “a strategy to reduce cardiovascular disease by more than 80%” by administering a polypill to everyone 55 years of age and older.² The proposal was generated in the debate surrounding risk-based versus population-based approaches to prevention, as described by Rose.³ In risk-based approaches, preventive measures are targeted specifically at higher risk group of individuals. The identification of high risk Clients typically relied on clinical and laboratory-based prediction algorithms, the traditional approach endorsed in most practice guidelines. In contrast, population-based approaches aim to shift the entire risk distribution, even modestly, with measures implemented at the population level.² One of the objections to the Wald and Law proposal was that large numbers of low-risk individuals would end up receiving non-indicated pharmacotherapy. So, despite randomized trials supporting the tolerability of various polypill formulations and regulatory approval in multiple countries, momentum in the field shifted toward viewing the polypill primarily as a strategy for high-risk individuals with established cardiovascular disease. The issue was that a one-size-fits-all approach to pharmacotherapy may not be optimal for patients with established disease, for whom aggressive cholesterol and blood pressure targets often require titration of multiple medications. Furthermore, patients who need secondary prevention often have comorbidities such as diabetes that influence the choice of therapy.³

Thus, throughout the several decades, there were little clarity regarding the role of the polypill in cardiovascular care. Small to large scale population are included in several clinical trials.

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Methodology:-

In this review paper, potential advantages and barriers are discussed in details. Literatures were searched in databases like Cochrane, PubMed, MEDLINE, and Science Direct using free texts. Open access Randomised Clinical Trials were included and after review dvantages and disadvantages are summarised. The searching terms were Polypill and cardiovascular disease, polypill and cardiovascular risk, cardiovascular risk and prevention

Potential Advantages of the Polypill:

There are numbers of potential advantages of Polypill on cardiovascular risk are following-

1. Polypill is a fixed dose combination and it has simplified the prescription and treatment for cardiovascular risks. As per WHO Guidelines, already the FDC is available and in practice for Tuberculosis, Leprosy etc. Though these advantages are not so proven, a study in high-risk patients with IHD and/or diabetes mellitus in the United States showed that use of a “cardioprotective bundle,” a simplified regimen involving fixed doses of generic statin and ACE inhibitor/ARB, delivered with minimal physician visits, laboratory tests, and dose titration, was feasible and scalable and led to decreased risk of hospitalizations for Ischaemic Heart Disease or stroke within 1 year.⁴
2. The multi combination single drug has less reported miss out rate, so adherence is better.⁴
3. A potential cost savings was provided by the pricing of the Polycap used in The Indian Polycap Study (TIPS) trial in India, where it is currently approved for use and marketed at a substantially lower cost than its component drugs. So polypill is cost effective.⁵
4. Consuming Polypill is highly recommended for large group of at risk people in a cost effective manner.

Potential Barriers of using Polypill:

Before a polypill is advocated, there is a need to address several issues:

1. There is Lack of evidence that a polypill can reduce cardiovascular risk this and there is uncertainty of safety in middle-aged individuals in primary prevention.
2. There is the need of acceptability for having polypill as it is a preventive approach. For positive enforcement, health education and patient counselling is highly required.
3. In RCTs, it has been evident that in combined pills pharmaceutical combinations needed to be clearly mentioned for their single components as each is having distinct pharmacokinetics.
4. Efficacy of Polypill has been examined for the parameters like B.P., Lipoprotein, cardiac function etc. but efficacy is not addressed for preventing cardiac emergencies.
5. It has been a barrier in recognising that polypills are applicable for preventing secondary prevention. But this are proved effective for primary prevention.

Some Approved Polypillafter RCT:

Brand name	Constituents	
Red Heart Pill™ 1	Aspirin (75 mg), atenolol (50 mg), lisinopril (10 mg), simvastatin (40 mg)	
Red Heart Pill™ 2	Aspirin (75 mg), hydrochlorothiazide (12.5 mg), Lisinopril (10 mg)	
Trinomia®/Sincronium®a	Aspirin (100 mg), ramipril (2.5, 5 or 10 mg), atorvastatin (20 mg)	
Trinomia®	Aspirin (100 mg), ramipril (2.5,5 or 10 mg), simvastatin (40 mg)	
Polycap®	Atenolol (50 mg), hydrochlorothiazide (12.5 mg), ramipril (5 mg), simvastatin (20 mg), optional aspirin (100 mg)	
Starpill®	Aspirin (75 mg), losartan potassium (50 mg), atenolol (50 mg), atorvastatin (10 mg)	
Polypill ^b	Amlodipine (2.5 mg), losartan (25 mg), hydrochlorothiazide (12.5 mg), simvastatin (40 mg)	
PolyIran	Aspirin (81 mg), enalapril (5 mg); or valsartan (40 mg), hydrochlorothiazide (12.5 mg), atorvastatin (20 mg)	
Ramitorva®	Aspirin (75 mg), ramipril (5 mg), atorvastatin (10 mg)	

Source:<https://www.pharmaceutical-journal.com>

Conclusion:-

Polypill is a part of comprehensive prevention for cardiovascular diseases which helps to prevent so many other chronic diseases. Based on available data about the individual component drugs, the polypill could potentially be widely used in secondary prevention and in selected high-risk individuals without CVD (eg, those with severe hypertension or diabetes mellitus with additional risk factors). In such individuals, 50% to 75% proportional risk

reduction can be anticipated from prolonged therapy. By contrast, in individuals without CVD and not at high risk, large trials are needed to quantify the benefits, potential risks, and cost-effectiveness of the polypill. If such trials provide clear evidence that the polypill reduces the risks of major CVD events by at least 40% to 50% in moderate-risk individuals (eg, a reduction in 10-year risk from 10% to 5%) with good safety, tolerability, and cost-effectiveness, then it may become a key component of both primary and secondary CVD prevention globally. However, the polypill should not be considered in isolation but as an integral part of a comprehensive CVD prevention strategy that includes effort to reduce tobacco use, increase physical activity, and increase consumption of heart-healthy diets⁶. Hence use of polypill can be promising in prevention of non-communicable chronic illnesses.

References:-

1. 1. World Health Organization. Polypill holds promise for people with chronic disease. Available at: <https://www.who.int/bulletin/volumes/83/12/news11205/en/>
2. 2. Prabhakaran D. Polypill uptake in India & Universal Health Care Programs. Available at: <https://www.georgeinstitute.org/sites/default/files/documents/events/presentations/polypill-uptake-in-india-and-universal-health-care-programs.pdf>
3. 3. World Health Statistics, cause-specific mortality and morbidity. Available at: http://www.who.int/whosis/whostat/EN_WHS09_Table2.pdf.
4. 4. Dudl RJ, Wang MC, Wong M, Bellows . Preventing myocardial infarction and stroke with a simplified bundle of cardioprotective medications. Am J Manag Care. 2009; 15:e88–e94. MedlineGoogle Scholar
5. 5. Yusuf S, Pais P, Afzal R, Xavier D, Teo K, Eikelboom J, Sigamani A, Mohan V, Gupta R, Thomas N; The Indian Polycap Study (TIPS). Effects of a polypill (Polycap) on risk factors in middle-aged individuals without cardiovascular disease (TIPS): a phase II, double-blind, randomized trial. **Lancet**. 2009; 373:1341–1351.
6. 6. Lonn E et al. The Polypill in the Prevention of Cardiovascular Diseases: Key Concepts, Current Status, Challenges, and Future Directions. *Circulation*. 2010;122 (20).