

Global Insight into Rare Diseases & Orphan Drugs Definitions: A Systematic Literature Review

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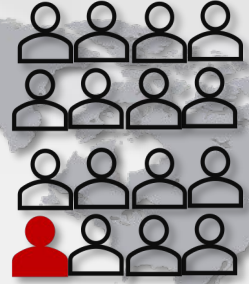


What is Rare Disease (RD)?

How do we treat it?



RDs



1 in 2500¹

ODs



<1/10 RDs pts have received ODs³





Should we **Develop** or
Adopt a definition ?



RDs



1 in 2500¹

ODs



<1/10 RDs pts have received ODs³



≈ 80%

Genetic origin²



Prevalence consanguineous marriage⁴

70%





Objectives

1. To identify the quantitative criteria used to define RDs and ODs
2. To identify the qualitative criteria used to define RDs and ODs
3. To explore the rationale behind the quantitative criteria used to define RDs and ODs
4. To explore the rationale behind the qualitative criteria used to define RDs and ODs



Research Question

What are the criteria to define
Rare Diseases & Orphan Drugs
globally?



Criteria

A photograph showing a person's hands, one holding a small red human figure on a wooden surface. The image is partially obscured by a white, torn-paper-like border on the right side.

Inclusion Criteria:

1. (7) geographic regions of the world (North America, South America, Asia, Europe, Africa, Oceania and Middle East)
2. Data collections open no specific date until now
3. Human
4. English language

Exclusion Criteria:





1. Rare cancers
2. Infectious diseases
3. Poisonings



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International prospective register of systematic reviews

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BMJ Open Criteria to define rare diseases and orphan drugs: a systematic review protocol

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ABSTRACT

Introduction Rare diseases (RDs) are often chronic and progressive life-threatening medical conditions that affect a low percentage of the population compared with common diseases. RDs are often treated with orphan drugs (ODs).

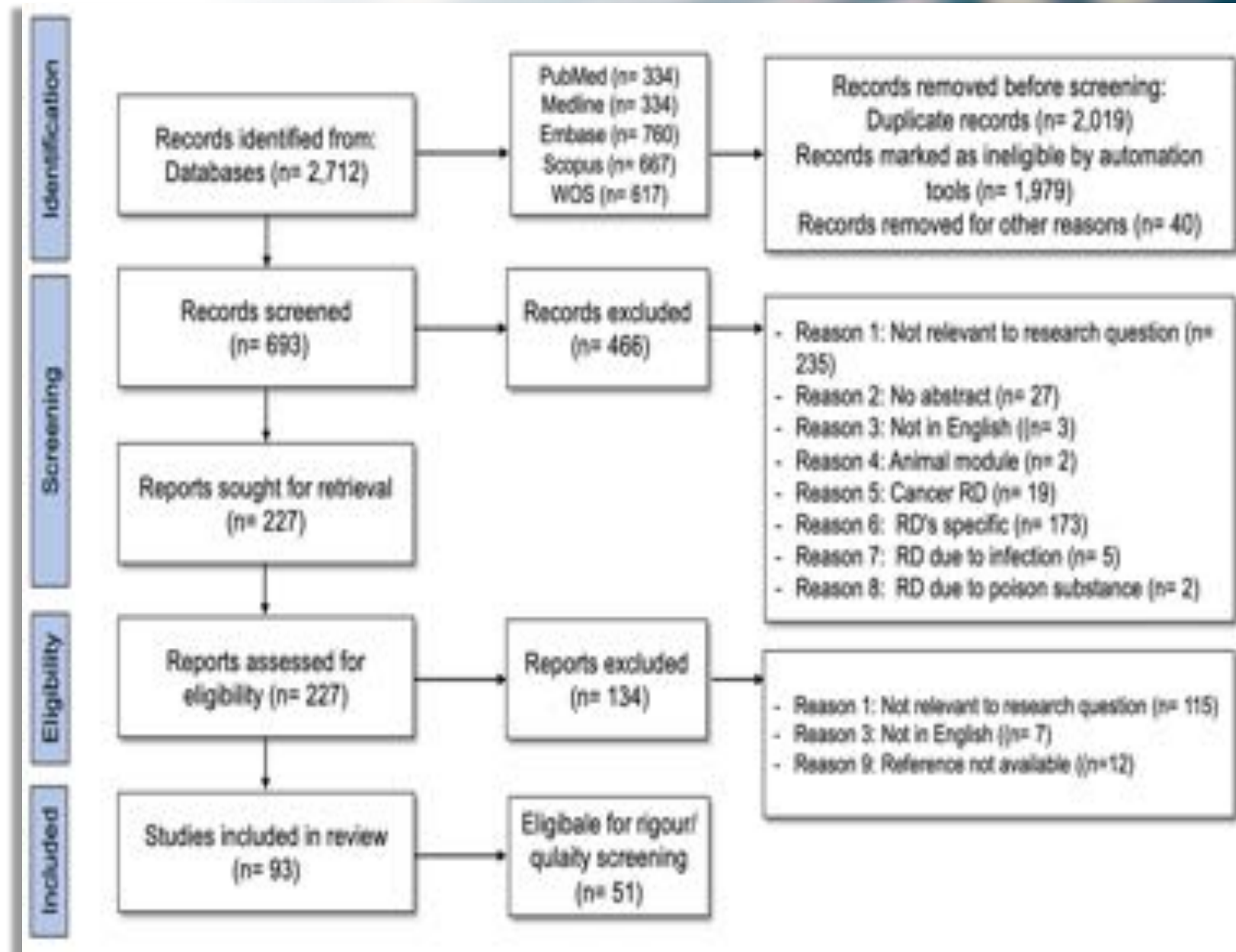
STRENGTHS AND LIMITATIONS OF THIS STUDY

- ⇒ This document describes a comprehensive systematic review following the Preferred Reporting Items for Systematic Reviews and Meta-Analysis Protocols (2015 guidelines).
- ⇒ It summarises the definitions and criteria retrieved from the literature in relation to study design, data extraction, methodological rigour and quality assessment.

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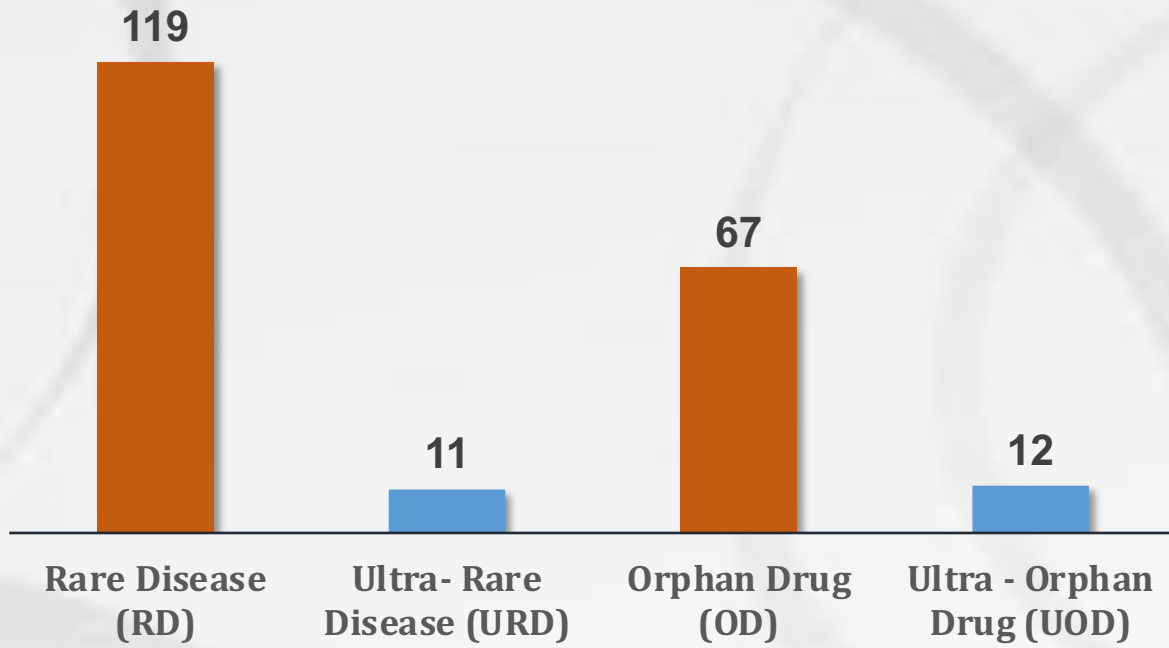




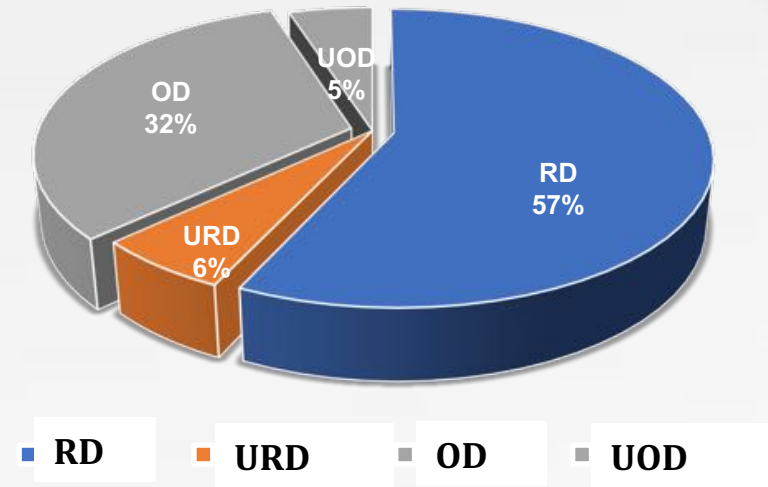
- A total of (2,712) publications were identified. Of them, 93 contained relevant information about ODs and RDs.
- 93 articles (1992 – 2021).
- (209 /93) definitions were identified.



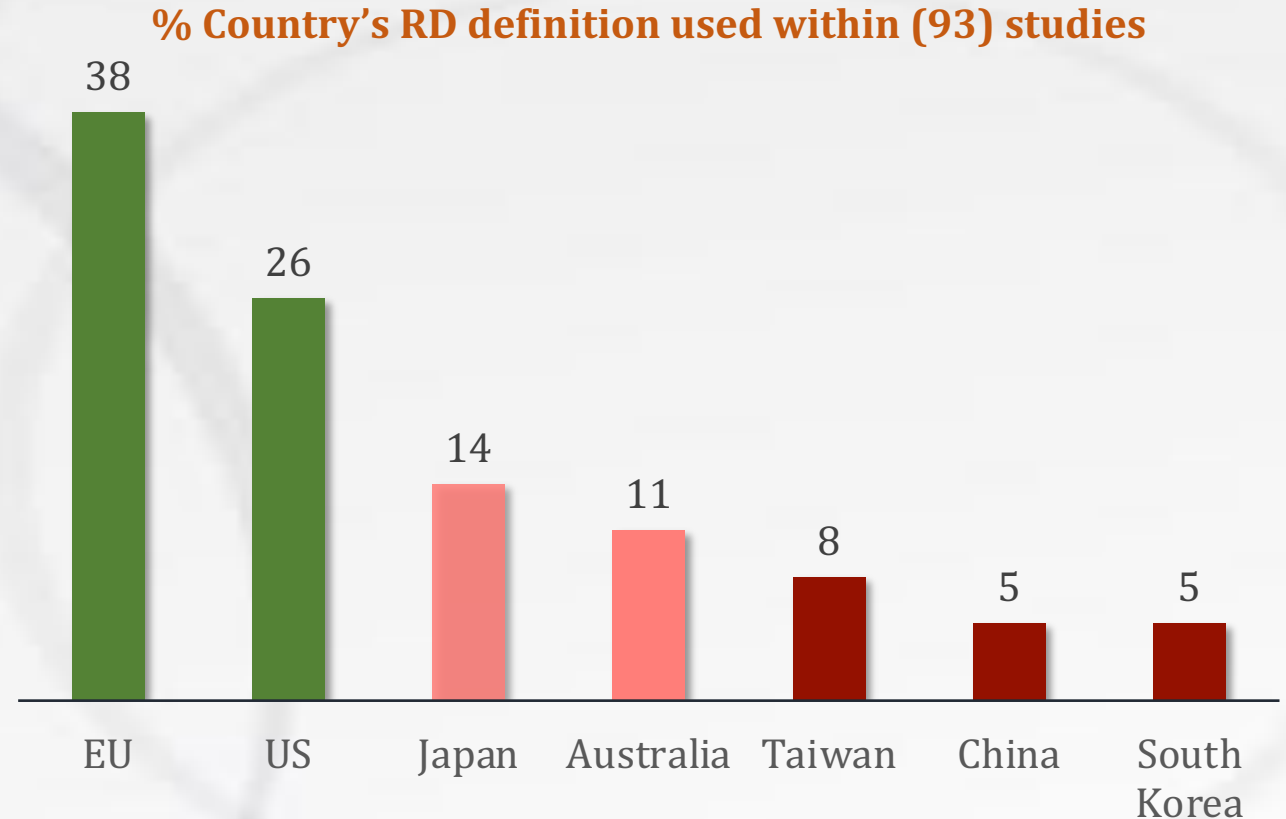
Frequency of RDs, ODs, UOD, & URD definitions



Percentage of Repeated Definitions



28 countries were reported to have one definition for RDs and ODs, while **3** countries reported to have two or more definitions for RDs and ODs owing to jurisdictional variations



Country	Definition	Date
UK	Rare Disease Framework	2021
	NHS	
EU 37 (40%)	<ul style="list-style-type: none"> Defined RD as a condition affecting < 1 in 2000 people. Any condition that require specialized medical care if they occur in <500 citizens yearly. Define RDs as being 'life- threatening or chronically debilitating diseases which are of such low prevalence (less than 5 per 10000) that special combined efforts are needed to address them so as to prevent significant morbidity or perinatal or early mortality or a considerable reduction in an individual's quality of life or socioeconomic potential.' 	

Country	Definition	Date
US 25 (27%)	Orphan Drug Regulation	1993
	RDA	2002
	ODA	1983
	FDA	

- Rare disease means any disease or condition that affects < 200,000 persons in the USA.
- The term 'rare disease or condition' means any disease or condition which occurs so infrequently in the USA that there is no reasonable expectation that the cost of developing and making available in the USA a drug for such disease or condition will be recovered from sales in the USA of such drug'.
- Define RD as 'any disease or condition that affects less than 200,000 people in the USA or affects >200,000 in the USA and for which there is no reasonable expectation that the cost of developing and making available in the USA a drug for such disease or condition will be recovered from sales in the USA of such drug'

Country	Definition
<p>EU / UK 22 (24%)</p>	<ul style="list-style-type: none"> ▪ If the drug is intended for the diagnosis, prevention, or treatment of a life-threatening or chronically and seriously debilitating condition affecting not more than 5 in 10 000 EU people or that it is unlikely that marketing the drug in the EU would generate sufficient benefit for the affected people and for the drug manufacturer to justify the investment.
<p>EU, The Netherlands</p>	<ul style="list-style-type: none"> ▪ Defines orphan drug, as either having an official EU orphan designation or if it targets a disease with a prevalence of <1 in 150,000 and shows a clinically proven therapeutic benefit and no other registered medicine exists.
<p>US 8 (9%)</p>	<ul style="list-style-type: none"> ▪ OD as ‘one intended for the treatment, prevention or diagnosis of a rare disease or condition, which is one that affects less than 200, 000 persons in the USA’ (which equates to approximately 6 cases per 10,000 population) ‘or meets cost recovery provisions of the act’

In Conclusion

- We were unable to find a globally accepted uniform definition for either RD or OD.
- Majority of the published definitions for RD and OD were old, lacked a scientific basis, no clear rationale, and no historical foundation for proposing these definitions.
- There was no consensus on the definitions of various qualitative descriptors.

In Conclusion

- These facts speak to the importance of a universally accepted definition with scientifically sound criteria.
- These can influence drug approvals, prices to enter the market, and reimbursement recommendations, thus affecting patient access to breakthrough and innovative medicines.



thank you

*“Individually, we are one drop. Together, we
are an ocean”*

Ryunosuke Satoro

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