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Commentary

Linguistic malady in medical literature: sinister synonyms

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ABSTRACT

Semantics (i.e. the science of "word versus meaning") is overlooked during training as a medical student and/or as a medical teacher. In a seasoned teacher, repeated clarifications are ingrained enough to obviate any confusion. But as a student, if we recall our own situation in the past, or as a teacher, if we visualize current students' viva outcomes or classroom experiences-the problem is immense.

Keywords: English, Semantic, Synonym, Medical literature, Boolean search

INTRODUCTION

In science, conventionally synonyms are not permitted-a terminology is unique for a definition. For example, 'complementary' and 'supplementary' are synonymous in the literature but in geometry, 'complementary' angles add-up to 90°, while 'supplementary' angles add-up to 180°.[1,2] 'Storm' and 'hurricane' are synonymous in the literature but on Beaufort scale, 'hurricane' is category 12, past 118 km/ hour; while 'storm' is category 11, a grade slower.[1,3]

'Drug dependence' and 'drug addiction' are used synonymously in the literature[1] but psychopharmacology does differentiate. In a hypertensive patient, body requires β-blockers to control BP-if stopped abruptly, hypertensive crisis happens, leading to brain haemorrhage-but patient shows no drug seeking behaviour (drug dependence without addiction).[4]

Cocaine/nicotine withdrawals lead to insignificant physical symptoms but a strong drug seeking behaviour (drug addiction without physical dependence).

Without any substance, someone can have 'process' addiction to gambling or pornography.[4]

Moron/ idiot/ imbecile are synonymous in the literature but 'idiots' are worst (IQ level 0-25) while 'morons' are the best (IQ level 50-75)-'imbeciles' being in between.[1,5] 'Illness' and 'disease' are synonymous in the literature but medically 'illness' is a subjective feeling of being unwell, while 'disease' is an objectively diagnosed condition with some etiopathology.[1,6]

This technical redefining/ differentiation settles a unique 'terminology to notion' pair. And that's why Hindi translation of technical terminology isn't popular-because of multiplicity! Different authorities translated 'crystal' as kriṣṭal, kelās, maṇibh, sfaṭik, sfāṭak and ravā.[7] Thus multiple authorities coin different synonyms, and the 'phoenix of confusion' arises out of the ashes again.

The problem is not limited to an acute/endemic/makeshift terminology of Hindi since a century-it is ailing English over centuries worldwide. For example, salbutamol (approved as INN/ BAN) and albuterol (approved as USAN) denote the same drug molecule $C_{13}H_{21}NO_3$.[6]

Acetaminophen versus paracetamol, adrenaline versus epinephrine, isoprenaline versus isoproterenol, acetaldedyde versus ethanol, acetoacetic acid versus β-ketoglutyric acid, parietal cells versus oxyntic cells etc. are other examples.[6] Thank God that the CGS systems of

electrostatic unit and electromagnetic units merged into SI unit of coulomb (=3×10^9 statcoulombs in ESU=1/10 abcoulomb in EMU) but biologists are not as lucky.[8]

Added to multiple authorities (e.g. INN and USAN above) problem-regular updates alongside cross-referencing of previous outdated notions is another reason of synonymy.

For example, tandem two pore domain potassium ion channels were initially sub-classified into TWIK; TREK; TASK; THIK; TRESK and TALK-but recently, all are included under gene sequence KCNK 1-18.[9] In the current medical literature, both conventions continue.

This can be condoned as a fuzzy border or ever evolving science-so now I come to school level biology. Genus in the scientific name of the Indian bullfrog can be called *Rana/Euphlyctis/Hoplobatrachus*/*Limnonectes* and species can be *tigerina tigrina/tigerinus/ picta*-thus there are 15 'scientific' nomenclatures of one organism in the current scientific literature.[10]

Reviewing the literature for this Indian bullfrog as an experimental animal is thus cumbersome-esp. when we suppose that any organism has a singular scientific name.[11] Technical dictionary of Dr. Raghu Vir (English-Hindi) has tried to translate all available scientific names of the animals and plants back into Hindi and thus spoiled the final effort of the universally acknowledged singular nomenclature.[12]

As a pharmacologist, I also deal in pharmacognosy and here too confusions abound. For example, kaṭchampā (various vernacular names are madanamast, manoranjitam, or hirvā champā-that's ok) is scientifically known as *Artabotrys hexapetalus=Artabotrys odoratissiums=Artabotrys uncinatus=Artabotrys uncatus*.[13] Thus it's problematic to quote it as the source of antifertility essence from leaves; or for a review of literature, run a Boolean search on the internet.[13]

However, the problem is not limited to researches in frog or foliage, or zoology and botany in India. An Australian plant *Chatenospora paludosa* was reclassified under various genera as *Costularia, Tricosftularia, Helothrix* and *Schoenus*. Another Australian plant *Cladium undulatum* was variously reclassifies under genera *Carpha, Chaetospora, Schoenus, Mariscus, Machaerina, Lepidosperma,* and *Tricostularia*.[14] And that's why MeSH glossary (internationally standardised vocabulary of 'medical subheadings') itself is enmessed.[15]

Even undergraduate medical literature is confused over 'mongolism' versus 'Down's syndrome'; or 'Reiter's syndrome' versus 'reactive arthritis'; or 'Raynaud's sign' versus 'acrocyanosis'; or 'diabetes insipidus' versus 'AVPD=arginine vasopressin deficit'.[6] Acclimation, acclimatation and acclimatization-all the three spellings are in vogue for same singular meaning.[6]

SUGGESTED REMEDIAL MEASURES

At the grass root level, in any medical/clinical subject and throughout term of any medical subject-nesting of confusing words/ideas and their clarification by compare and/or contrast can be mandated in medical education. Like communication skill or biomedical ethics-such clarifications can be done under a separate subject heading of disambiguation, as a moral responsibility in any teaching-learning session.

All the possible synonyms in scientific literature should be assorted and pigeonholed into one universally accepted equivalent. Till the synonymy is fully abrogated-on MeSH, all options should be mentioned with finalised singular terminology. This stupendous work should not be left to any individual, organisations or English-speaking country. Regional jingoism must be ruled out prudently.

Analogous to internal validity and external validity of study design-any medical subject expert can enlist such confusing words on two fronts. Firstly, for clarification within the subject and secondly, among various medical subjects.

Like data of pharmacovigilance and adverse drug reactions worldwide getting centralised and processed at Uppsala Monitoring Centre (Sweden)-any individual/institutional/regional/national English terminology could be unified and standardized by a central worldwide accepted authority (like WHO). Accordingly, reference books like textbooks/ dictionaries/ journals should be streamlined. Like government gazettes, periodic updates in scientific terminology should also be centralised/incorporated.

And till all such confusions are finally disambiguated, each and every medical teacher must mandatorily document and report dedicated effort to disambiguate-through nesting (within specified subject topics), horizontal integration and vertical integration (across subjects).

CONCLUSION

Parallel terminology has been causing a lot of ambiguity in scientific literature search on internet or even otherwise. This can be minimized by a universally agreed nomenclature with gradual removal of other synonymous recensions from scientific literature and clarifications at academic level given side-by-side.

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